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# AMIGA

## SHOPPER

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FORMAT

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# Find your way out of the memory maze

## INSIDE

### • CIX FOR FREE

Get free membership to the UK's top  
bulletin board/conferencing system

Comms: page 73

### • MAKE YOUR MIND UP

Find out how to make decisions using C,  
the language of the pros

C Programming: page 84

### • EXPRESS YOURSELF

Is Art Expression the drawing package  
Amiga artists have been waiting for?

Desktop Publishing: page 41

### • MORE FISH TO FRY?

Could this be the end of the Fred Fish  
phenomenon?

Public Domain: page 107

All aspects of  
Amiga RAM  
explained PLUS  
detailed  
reviews of 14  
memory  
expansion  
options

## AMIGA ANSWERS

Ten pages packed with solutions to all your  
problems with the Amiga. Whatever your  
hardware or software problem, we'll sort it out!

## PLUS

News, Readers' Letters, and  
columns on Music, Video,  
AMOS, AmigaDOS, Education,  
C Programming, Do-It-Yourself  
Hardware Repairs and ARexx

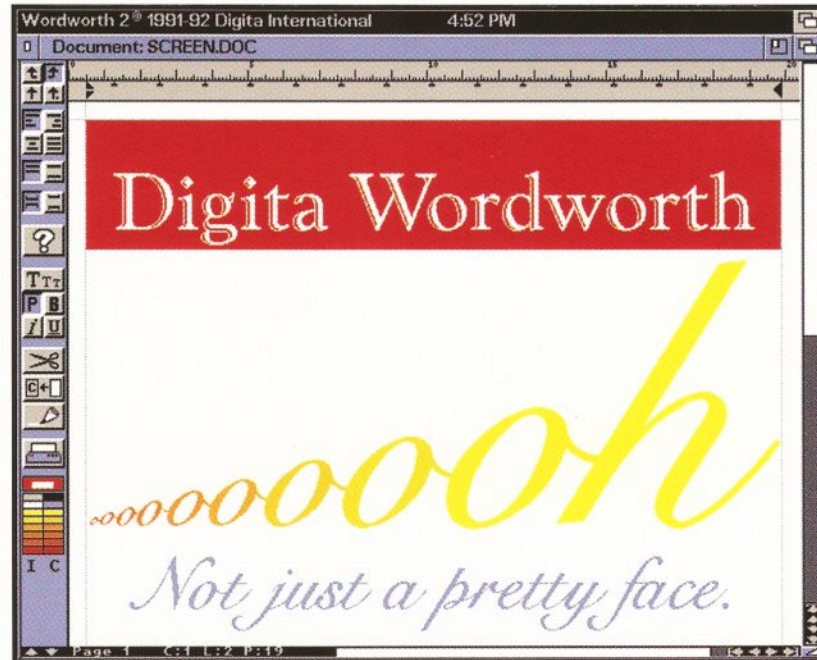
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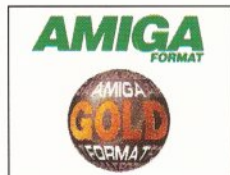




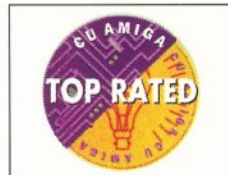
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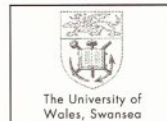
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# AMIGA SHOPPER

## AT-A-GLANCE GUIDE

To help you find what you want quickly and easily, this is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 23. The page numbers given are for the first page of the article in which the subject is mentioned.

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Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:

**Amiga Shopper,**  
30, Monmouth Street,  
Bath BA1 2BW.

# WELCOME

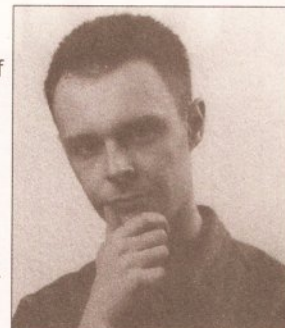
It was TS Eliot who described April as the cruellest month for its mixing of memory with desire. Well, he was wrong – this month we fulfil your desires by providing a complete guide to Amiga memory. Not only do we give you the low-down on just what all the different types of memory expansion are, but we also review 14 different products to ensure you make the right purchase for your needs. Let's face it, a half or single Megabyte of RAM is fine for playing games, but if you want to get serious then you really do need more. Turn to our main feature starting on page 14 to find out how you can get it.

Those of you who own (or are about to buy) modems are in for a special treat this month. We've tied up a deal with the people at the Compulink Information eXchange to give you all free membership. This normally costs £25 plus VAT, so we're saving you a substantial amount of money. CIX is a huge electronic bulletin board/conferencing system where you can engage in lively debate, get advice on problems and talk to many of *Amiga Shopper's* regular writers. Details of how to get your CIX for free are on page 73.

As you've come to expect, we're also carrying a whole load of reviews, including an in-depth look at *Art Expression*, a structured drawing program that should offer some stiff competition to industry-standard Mac illustration packages.

Sadly, the Amiga world has taken a couple of blows this month, with the huge dealer chain Future World calling in the administrators and Fred Fish threatening to close down his public domain library. Read the full stories on pages 7 and 107.

I hope you enjoy the issue!



*Cliff Parsham*  
Editor

## PUBLIC DOMAIN WORLD

### DISHING UP THE FISH

There are thousands of Amiga programs which are available for little more than the price of a disk.

There are also many, many more which you can try out before you buy. Each month in Public Domain World we examine the best of these programs and explain how to get hold of them.

This month we look again at the latest batch of programs from the world famous Fred Fish collection, and carry alarming news about its possible demise. Public Domain World or

### School's out for summer?

as we call it this month, starts on page 107.

## AMIGA ANSWERS

10 PAGES DEVOTED EXCLUSIVELY TO  
ANSWERING YOUR QUESTIONS

Every month in *Amiga Answers* our panel, comprised of experts from each of the major fields of Amiga computing, answers more genuine reader questions than any other Amiga magazine. And in the Code Clinic all your programming errors will be explained and corrected as well!

We answer questions every month on  
Workbench • The CLI • Comms • Programming •  
DTP • Video • Business software • And more!

THE ANSWERS START ON PAGE 23

## FOR A FULL LIST OF CONTENTS, TURN THE PAGE

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# INSIDE THIS ISSUE

## AMIGA SHOPPER Issue 24 April 1993

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Tel: 0458 74011

So who fancies a year's free subscription? OK, well have a go at this: which of Shakespeare's plays was considered flawed by TS Elliot, because of its lack of an 'objective correlative'? Send your answers to: 'Surely subjectivity is objective', *Amiga Shopper*, 30 Monmouth St, Bath, BA1 2BW. First correct answer out of the bag wins 12 free issues. Last month's winner was Paul Groves of Alfreton in Derbyshire, with 'Ajax'.

## News

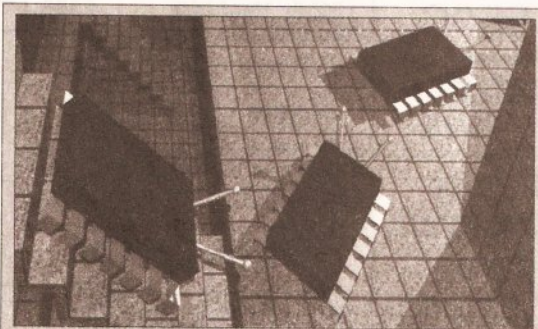
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Future World goes into administration **PLUS** Commodore UK issues writ against ex-Managing Director

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Thoughts on the Amiga's place in the future of computing



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The definitive guide to Random Access Memory on the Amiga - what it is, and what to buy. If you're looking to expand your system, turn here first

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Our panel of experts devote their incredible brain-power to solving your technical problems

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News of the first ever *AMOS Pro* update disk and an explanation of how to produce parallax scrolling screens **PLUS** answers to all your *AMOS* programming problems

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Beginners rejoice! Mark Smiddy explains the basics of AmigaDOS **PLUS** a script for calculating resistor values

**FREE!**

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Save yourself nearly £30 by taking advantage of free membership to CIX, the bulletin board and conferencing system where you can find the *Amiga Shopper* writers

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Professional games writer Toby Simpson explains how decisions are made in C

## DIY Hardware Repairs

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How do you know if your chips are cooked? Wilf Rees is your man with the ~~frying pan~~ screwdriver

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It's your chance to pick up some tasty gear at special *Amiga Shopper* prices

## Subscriptions

95

Don't leave yourself open to disappointment - guarantee the next twelve issues of your favourite magazine

## ARexx

99

Jason Holborn shows how to manipulate strings with the latest addition to the collection of Amiga languages

## User Groups

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Amiga users of the world unite!



## Public Domain World

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A look through the latest, and possibly the last, in the gargantuan Fred Fish Collection. Can it be true that he's thinking of scaling down his operation?

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## Competition

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Those wonderful folk at Europress have donated 15 bags full of ADI goodies, each worth £25.99. All you have to do to win is answer the three easy-peasy questions



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240C Colour £265

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24pin Colour\*

Enhanced 24pin printer, (Swift 224 replacement.) Phone for a data sheet \*optional colour. Price with cable & paper

200 Mono £195

200C Colour £219

## Citizen's Print Manager

These advanced printer drivers transform colour printouts to laser type quality Version 1 (224 & 24E) ..... £5

Version 2 (Swift series 2) ..... £10

Drivers 1/2 price if bought with a printer

## Printer Drivers

Canon BJ-10e/ex ..... £5

Deskjet 500 Colour ..... £10

## Citizen 120D +

with cable & paper £109

All Citizen printers have 2 year warranty

## Citizen Swift 9

with cable Mono £155 & paper Colour £179

## Panasonic KXP1123

Probably the best 24pin mono printer available. With cable & paper

£169

## Panasonic/Epson

KXP1170 9pin ..... 134

KXP1124i 24pin ..... 215

KXP2180 9pin Colour .... 189

KXP2123 24pin Colour... 229

Epson LX400 9pin ..... 119

Epson LQ570 24pin ..... 265

Prices include VAT cable & paper

## Naksha Scanner

New with touch up software £109

## Naksha Mouse

for Atari ST & Amiga with house & mat £21.50

## Squik Mouse

for Atari ST & Amiga £13.90

## Deskjet 500

HP 300dpi Inkjet printer. Laser quality at dot matrix price. 3 year warranty. With cable & paper £325

## Deskjet Colour

300dpi colour inkjet printer. Colour laser quality at 1/10 of the cost. 3 year warranty. With cable & paper £419

## New HP

### Deskjet 550C

300dpi colour inkjet printer. Colour laser quality, with colour and black cartridges resident. 3 year warranty. With cable & paper £529

## Printer Packs

All printers are supplied with a printer pack consisting of printer paper and a connection cable.

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New £159

## Star

LC20 Mono 9pin ..... 119

LC200 Colour 9pin ..... 179

LC2420 Mono 24pin .... 185

LC24100 Mono 24pin .... 175

LC24200 Colour 24pin .. 259

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## Kickstart Upgrades

Commodore 2.04 full upgrade 79.00

Kickstart ROM only v2.04 .... 41.50

Kickstart ROM only v1.3 ..... 29.00

Phoenix rom sharer ..... 24.95

Keyb'd operated rom sharer 24.95

VXL30 25MHz Accelerator ..239.00

Fatter Angus custom chip .... 37.50

## True Mouse

for Atari ST & Amiga £15.90

## Happy Mouse

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## New Prices

### GVP Series 2

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40Mb A530 Combo £645

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80Mb Hard Disk £319

120Mb Hard Disk £395

Controller (no disk) £134

GVP ram £29 per 1Mb

## Ram Upgrades

A500 1Mram + clock ..... £24.90

A500 1Mram no clock ..... £19.90

A500 + 1Mram + clock ..... £39.90

A600 1Mram + clock ..... £49.90

## Citizen ProCM

14" Super High res. Multisync Colour monitor, dot pitch 0.26mm, suitable for A3000 or A4000

with cable £349

## Commodore 1084ST

As 1084SD only includes stand

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## Commodore 1084SD

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## IN BRIEF

### FLYING GRAPHICS

Effortless animation for titles and graphics is possible using Mediascape's *Flightpaths* utility, now available for *Deluxe Paint IV*. From a library of 200 moves you can have your captions loop, spiral and pirouette before slotting neatly into place. *Flightpaths* costs £49.95 (plus £1.90 p&p) and can be obtained in the UK from Meridian Software ☎ 0533 863501.

### SWIFT 2 DRIVER

Citizen have released a new AmigaDOS 2.0 printer driver to support the Swift 2 series of 24-pin colour dot matrix printers. The driver retails for £14.10. Citizen ☎ 0753 584111.

### SPIKE PROTECTION

Voltage surges (spikes) on the mains are one of the most common causes of computer crashes. The Noiseguard from Schaffner EMC Ltd is a high-specification two-stage filter designed to suppress mains spikes. The Noiseguard can handle any load up to 10A at 250V and costs £57.58. Schaffner EMC Ltd ☎ 0734 770070.

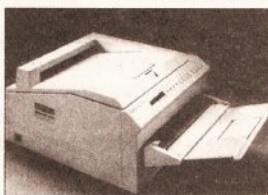
### BACKUP PRO

The latest version (9.92) of the multi-purpose disc utility package *X-Backup Pro* is now available from Siren Software for £39.99. You can reach Siren on ☎ 061 724 7572.

### MUSIC LIBRARIAN

*Music Librarian*, a sophisticated new information management package for musicians, has just been released by Applied Research Kernel (also known as 'ARK'). It's primarily aimed at professional users such as disk jockeys and music librarians, and retails at £39.95. For more information contact ARK on ☎ 0983 551496.

## Epson, Ricoh and Xerox laser printers



Epson, Ricoh and Rank Xerox all have new offerings in the laser printer arena this month.

From Epson comes the EPL-5200 (as a replacement for the EPL-4300 model) with 300 dots per inch (dpi) resolution. Priced at £929, it is driven by a 68000 processor that is clocked at 16.67MHz and comes with 13 scalable and 28 bit-mapped fonts. The EPL-5200 has a first page print speed of 19 seconds and you can expect to get 6000 pages (at 5% print density) from the toner cartridge. 1Mb of memory is supplied and this can be expanded to 5Mb.

The EPL-5200 supports as standard HP III/II; FX; GL-2 and LQ emulations. Epson ☎ 0442 61144

Ricoh has released a 4Mb version of its LP1200 laser printer. Selling for £799 (compared to £699 for the 2Mb model) it has an impressive 400 dpi print resolution and a rapid first page print speed of 15 seconds. The toner cartridge will produce 5000 copies (at 5% print density). Four bit-mapped and 6 scalable fonts are provided and LaserJet III, PCL5 and HP-GL/2 emulations are supported. We tested the 2Mb version of the LP1200 in our

printer round-up of two issues ago (February '93) where it scored top marks. Ricoh printers are distributed in the UK by Silica Systems ☎ 081 309 1111.

Rank Xerox has two variants of the same printer, the 4010 II (£869) and 4010 III (£1,095). Both printers have 300 dpi resolution and boast a first page print speed of 34 seconds. The 4010 II is supplied with 11 resident bit-mapped fonts and 512K RAM, while the 4010 III has 15 fonts and 2.5Mb RAM. Both machines can be upgraded to take 4.5Mb RAM. Their toner cartridge will produce 1500 copies (at 5% print density). An on-site warranty is included in the purchase price of each machine. In the case of the 4010 II this is for one year, while the 4010 III is supported for three. Rank Xerox ☎ 0895 251133.

## FUTURE WORLD PLACED IN ADMINISTRATION

Bedford-based company Future World Computers Ltd has been placed in administration at the request of its directors. Future World, which also traded as Dynamite Computers, ran six shops and a mail order service.

It's believed that many of its customers have outstanding orders placed with the company. When asked what a customer's chances are of recovering any money owed, a spokesperson for the administrators replied: "Very slim really - we're trying to see what we can sort out." Future Publishing, the publisher of *Amiga Shopper*, is itself owed a substantial sum.

### WHAT TO DO

Customers who have not received goods, have received faulty goods or only partial delivery of their order, are urged to contact the administrators as soon as possible.

- If you bought your goods via credit card, and the total cost came to more than £100, then you will be covered by insurance. Contact the credit card company.
  - Some credit card companies also insure claims under £100 for 90 days following the purchase.
  - Otherwise write to the administrators as soon as possible, outlining your complaint in full.
- The administrators are: Pannell Kerr Forster, 159 Charles Street, Leicester LE1 1LD ☎ 0533 856611.

The company was placed in administration on January 27th, following an attempt in December to increase the

company's viability by closing down its mail order operation. At that time the then-Managing Director Raj Ling left for health reasons, leaving his partner Karl Morton in charge.

Morton's accountants advised him to put the company in administration. As a result three of the six retail outlets have been closed, making four redundancies. A buyer for the company is currently being sought, with adverts being placed in the *Financial Times*. Currently around 40 people have expressed an interest. Any money gained will go towards reimbursing creditors and customers expecting money or goods.

There may be advertisements for Future World or Dynamite Computers appearing in the press that have not been cancelled in time. The mail order service is closed and readers should not respond to such adverts.

*Amiga Shopper* would like to assure its readers that the vast majority of the mail order companies advertising in the magazine are professional and creditable.

## Oki extends life of print heads

Oki has launched two 9-pin dot matrix printers incorporating 'intelligent print head technology'.

The print heads in these two new printers sense the thickness of the loaded paper and automatically adjust to retain the optimum distance

between head and paper. This helps cut down on print head wear, reducing operating costs. It also makes the printers ideal for situations in which different types of stationery, such as letters, envelopes and forms, are regularly interchanged.

The two models are named the ML520 and the ML521, the latter being a wide carriage version. They will print up to 433 characters per second in draft mode and 81 cps in letter quality. Emulations supported are Epson FX, Microline and IBM Proprinter/AGM.

The ML520 costs £499, while the ML521 costs £599. If you'd like more details, Oki can be contacted on ☎ 0753 819819.



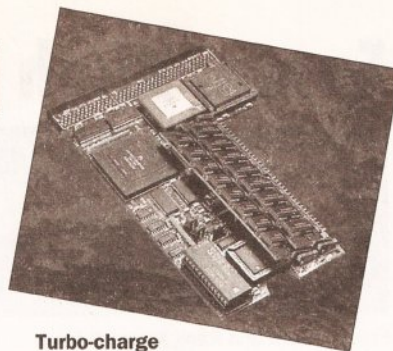
# GVP accelerator board

Great Valley Products (perhaps better known as 'GVP') has just released an accelerator board for the A1200 called the A1230 Turbo.

Priced at £399 the A1230 is based around a 68030 processor which is clocked at 40MHz. The board comes with 1Mb of on-board RAM and also has two SIMM sockets that will accept 1, 4 or 16Mb SIMMs

— giving a maximum configuration of 32Mb of 60 nanoseconds DRAM. A socket is also provided for a Floating Point Unit — when installed this will give a dramatic speed improvement for all those floating point mathematical operations.

The GVP A1230 accelerator is distributed in the UK by Silica Systems ☎ 081 309 1111.



**Turbo-charge your new A1200 with GVP's A1230 processor accelerator**

# AMIGA FORMAT Live '93

**WEMBLEY EXHIBITION CENTRE  
7 - 9 MAY 1993**

Details of May's *Amiga Format Live* show are beginning to come thick and fast, with several major players in the Amiga market confirming their attendance.

The show, which takes place at Wembley between the 7th and 9th of May, looks set to be something very special, with companies such as Commodore, Digita International, HB Marketing, ICD, Power Computing, Rombo and Silica Systems ready to exhibit their wares. As well as the tried and trusted products that have made these companies' names in the past, many exciting new launches are also slated to make an appearance, though the companies are naturally reluctant to spoil the surprise at this stage by revealing what these may be.

Commodore will of course be there in force. The

# SHOW UPDATE

company's National Marketing Manager Dawn Levack said: "Having discussed the direction to be taken by the show with Future, we feel that our interests couldn't be in better hands," — Future (Publishing) being the company behind both *Amiga Format* and *Amiga Shopper*.

As well as having the opportunity to see all the best in Amiga hardware and software and picking up plenty of great bargains, you'll also get the opportunity to participate in a number of special events. These include the renowned *Amiga Answers* expert panel, who will be there to solve your hassles and give advice live; the *Amiga Power* games arcade, where you'll get a chance to let off some steam; and the *Sound and Vision Experience*. This latter will be an area in which you will find a sound studio, a graphics studio and a full scale video production facility. If you were wondering what your Amiga is capable of, then look no further.

For more details, including how you can guarantee your place by booking your ticket in advance, turn to page 102.

## Drive controller for A500

A500 owners who want to take advantage of the cheaper IDE hard drives will be interested in GoldenIMAGE's latest product. AlfaPower is an integrated IDE controller and memory upgrade card.

It is compatible with the A500 and the A500 Plus and will accept up to 8Mb of memory using 1Mb x 4 Zip packages, and either two 2.5-inch hard drives or a single 3.5-inch unit. A mounting bracket, software and the necessary IDE cables are provided. A connector is provided for an external power supply.

AlfaPower costs £99 without memory or hard drive, from GoldenIMAGE ☎ 081 3651102.

## A1200 real time clock

Prima Technologies has released a real-time clock for the A1200.

The company's battery-backed clock fits internally and works with AmigaDOS' date and time functions. It costs £15 from the First Computer Centre ☎ 0532 319444, and is compatible with the Microbotics MBX1200 RAM expansion board.

## BLIZZARD MEMORY BOARD

German-based company Phase 5 Digital Products has released a Fast RAM expansion board for the A1200, plus a SCSI controller for the A4000.

The Blizzard 1200/4 memory board is installed in the trapdoor slot of the A1200 and comes with 4Mb of factory-installed 32-bit zero wait state Fast RAM. While obviously providing more memory for applications or data, access time is also significantly faster than for the A1200's built-in memory, so increasing operating speed.

The Blizzard board has an on-board connector that allows a further 4Mb of Fast RAM to be added by attaching a Blizzard 1200/ADD4 memory module. Furthermore, the board has a socket for a maths co-processor (68881 or 68882) that will greatly enhance the speed of floating point intensive operations. The 1200/4 board is available for £249, with the additional 4Mb expansion module priced at £199.

Phase 5 Digital Products ☎ 01049 69 548 1844.

## MARCAM GENLOCK

Marcam has added an effects box to its 8802 Genlock system. Called the Marcam Rendale 8802 FMC Genlock and selling at £178, the additional effects box is used to control the mode in which the Genlock operates.

This means that you can control the balance between the Amiga and video display — picking either Amiga only, video only or what is termed foreground mode. In the foreground mode the Amiga background colour will become transparent, which leaves any Amiga graphics that are not in the background colour overlaid above the video input.

Marcam products are handled by Meridian Software Distribution Ltd. For more details you can call ☎ 081 543 3500.

## TV MODULATOR REPAIRS

A500 users with broken TV modulators can now get them replaced by Trilogic. For £20.99 (which includes postage) Trilogic will repair or exchange the defective unit which then comes with a six month guarantee. You must send the damaged modulator with your order — they're like gold dust and Trilogic recycle all of them. If you happen to be sitting on a pile of A500 modulators in any condition then Trilogic would like to hear from you.

Trilogic also offers a 15-inch modulator extension lead that provides a flexible connection between the Amiga and modulator enabling the two units to be separated — so reducing the chance of the modulator falling out and being damaged. The extension lead costs £10.99. Trilogic ☎ 0274 691115.

## IMAGES ON T-SHIRTS

For the past eighteen months Studio 101 has been offering Amiga users the opportunity to have their own designs printed on to white T-shirts. This service has now been extended to printing on black shirts as well. The printed T-shirts are machine washable (although you are best advised not to use washing powders containing bleaching agents). All that you need to do is send a disk containing an IFF or 24-bit file of your design which will fit within the maximum print area of A3.

Prices are £7.99 (child) and £10.99 (adult) for white T-shirts. Black T-shirts cost £10.99 (child) and £15.99 (adult). Contact Studio 101: 101 Sudeley, Dosthill, Tamworth, B77 1JU. Or ☎ 0827 280884 after 6pm.

## AVOIDING VOIDING

Worried about voiding the warranty on your Amiga if you open the machine to fit a hard drive? Then help is at hand from those helpful people at Trilogic.

They've arranged with a leading UK insurance company to offer owners two or three year warranties on both computer and drive.

For systems that are worth up to £600 the cost is £27.99 for two year cover and £42.99 for three. If your system is worth between £600 and £1000 you can get a two year warranty for £42.99 and three years for £67.99.

Warranties are only available for Amigas (and drives) that are less than a year old and there are certain restrictions — theft and wilful damage aren't covered. Neither is cosmetic damage that doesn't stop the computer from working. Trilogic ☎ 0274 691115.



# New Horizon Computers

## The Hard Drive Specialists

### A600 & A1200 Hard Drives

The ESSENTIAL add on for all  
SERIOUS Amiga users.

Upgrade your A600 or A1200 with a brand new 2.5" internal IDE Hard Drive. All our special installation kits come complete with fully formatted IDE Hard Drive, cable, mounting kit and fitting instructions.

All New Horizon Hard Drives are sourced from Brand Name suppliers and have been fully tested for 100% compatibility with the Amiga A600 and A1200.

### FULLY INCLUSIVE PRICES

SIZE	DRIVE	WITH 600	WITH 1200
20 Meg	£120.00	£385.00	£495.00
40 Meg	£180.00	£NA	£555.00
64 Meg	£200.00	£455.00	£575.00
84 Meg	£250.00	£485.00	£605.00
127 Meg	£365.00	£625.00	£745.00

ALL OUR DRIVES COME PARTITIONED, FORMATTED  
AND WITH WORKBENCH 2 OR 3 INSTALLED  
A600's & A1200's & PCMCIA CARDS  
NOW IN STOCK. PHONE FOR LATEST PRICES

### ★ ★ ★ SPECIAL OFFER ★ ★ ★

#### FOR A600 & A1200 Owners

New Horizon will collect your machine, fit the drive of your choice and return your machine by overnight carrier to any mainland UK address for a fully inclusive price of only £38.50. Offer lasts until April 20th 1993 only. Phone our Sales Hotline for further details.



**A600HD owners - Upgrade to a bigger drive. Phone for more details. Installing a Hard Drive will invalidate your Commodore warranty so all computers fitted by us with a New Horizon Drive are covered by our own full 12 month RTB Warranty from date of purchase.**

### HOW TO ORDER

#### 1. By Phone

FREE next working day delivery on all items shown and for Credit Card orders placed before 3pm (UK mainland only). Saturday delivery add £10.00

#### 2. By Post

Send a cheque or bankers draft made payable to "New Horizon Computers" and post with your order to:

NEW HORIZON COMPUTERS,  
Mail Order Dept  
High Hope, Lea,  
Ross on Wye  
Herefordshire HR9 7LN

Remember, when you buy from New Horizon Computers you receive:

- ★ Fully Inclusive Prices
- ★ No Hidden Extras
- ★ Free Next Day Delivery
- ★ Full Technical Support
- ★ Full After Sales Service



CREDIT CARDS  
WELCOME

VISA

New Horizon Computers,  
High Hope, Lea, Ross on Wye,  
Herefordshire HR9 7LN  
Tel: 0989 750260  
Fax: 0989 750337

**SALES HOTLINE 0989 750260 TECHNICAL HELP 0989 750337**

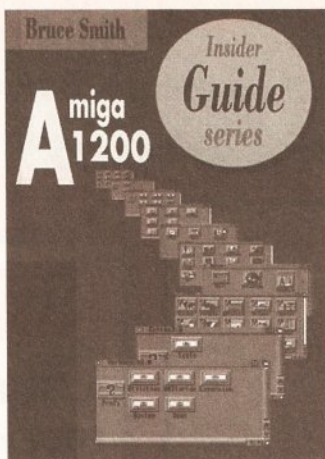


## BEGINNERS BOOK

Bruce Smith Books has just released *The Insider Guide to the A1200*. The book provides an excellent introduction to the A1200 – its 256 pages are organised into 24 chapters that have been written in an easily accessible tutorial style.

A valuable and innovative feature is the 55 'Insider Guide' panels. These use a series of annotated screen shots to provide a step-by-step guide to the particular operation being explained.

*The Insider Guide A1200* is priced at £14.95 and can be obtained from Bruce Smith Books ☎ 0923 894355.

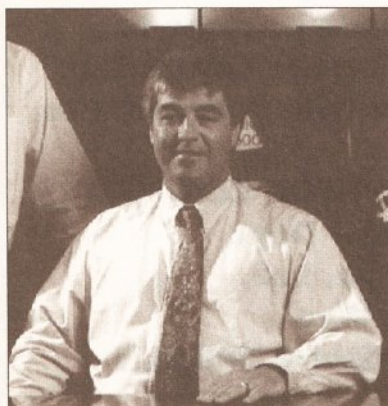


## RED NOSE DAY

Commodore has produced a special Comic Relief Amiga 1200 pack to raise money for this year's appeal. For each of the 25,000 packs sold, Commodore is making a £10 donation to Comic Relief. The A1200 comes bundled with Ocean Software's specially-written Comic Relief game *Sleepwalker* and costs £399.



# COMMODORE IN LEGAL BATTLE



**Steve Franklin, ex-Managing Director of Commodore UK, is one of several facing a writ from the company**

Commodore UK has served a writ against ex-Managing Director Steve Franklin, reports trade paper CTW.

The writ also applies to two

former directors and four ex-employees of FMG, the now defunct company that undertook Commodore's repair commitments, as well as the co-owner of a failed Commodore re-seller. The writ alleges that Franklin is responsible for breach of contract, negligence and wrongful interference with Commodore's business. Damages from Franklin are being claimed.

Solicitors for the defendants have stated that their clients deny the charges, and that there is a possibility of a counter-action.

FMG went bust in October of last year with debts of £1.8 million. Of interest to any readers who are missing equipment that was with the company at the time of the closure is the writ's demand of an account of all the monies received on the sale or disposal of Commodore's goods.

## Video for Sequencer One

Owners of the *Sequencer One* and *Sequencer One Plus* music packages will be interested to learn that Gajits Music Software has now produced a tutorial video. The video is divided into ten lessons that take the user from basic principles through to knowing everything that they need to know to record, edit and arrange their own music. Gajits Music Software ☎ 061 236 2515.

## Silica price cuts

Stop press! GVP has knocked £50 off the price of its best selling hard drive for the A500 and A500 Plus, the 42Mb HD8+. Priced now at £299, the HD8+ is a high speed SCSI drive that is fitted externally – so it doesn't invalidate the Amiga's warranty.

Room is provided in the drive for 8Mb of internal RAM expansion as well as the addition of seven further SCSI devices. For further details contact Silica Systems on ☎ 081 309 1111.

## Leeds gets new shop

Phoenix, the mail order Amiga suppliers are opening a store dedicated to the Amiga in Leeds.

The shop, to be known as Phoenix Computer World, will cover all aspects of the Amiga and its wide range of associated peripherals.

So, if you'd like to pop in next time you're in the area, you'll find the new store at Unit 2, York Towers, York Road, Leeds LS9.

## Opalvision updates

Users of Opalvision 24-bit graphics cards will be interested to learn that update disks are now available in the UK. EM Computergraphic is distributing a two disk set priced at £5.99 (including postage). These disks contain *OpalPaint 1.4*, *OpalPresents 1.2*, *OpalHotkey 1.4*, *OpalAnimUtils 1.4*, *OpalLibrary 3.1*, all the new paper types, artist tools, draw modes and the *AdPro* display module for Opalvision. EM Computergraphic ☎ 0255 431389.

## Director II graphics card

The Director II is a powerful new 32-bit graphics card from Tritec Marketing.

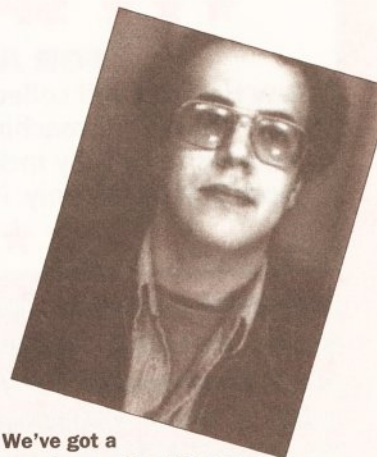
Based around a Texas Instruments TMS 34020 processor (which can be enhanced by the addition of a TMS 34082 maths co-processor) running at 32MHz, the Director II provides broadcast quality images and is designed primarily to support users with a need to produce high quality 3D graphics in-house. Tritec Marketing ☎ 081 991 5591.

## NEW STAFF WRITER

A new face joins the AS team this month – Gus Chandler, who takes up the illustrious position of Staff Writer.

Gus has had experience with a wide range of machines – from a valve-based GEC Elliott 800 to 68000 processor machines – including of course the Amiga. He has experience of programming in a variety of languages and in the early 80s worked for Central TV on a childrens' computer programme – *The Magic Micro Mission*.

Gus says: "I'm looking forward to working on *Amiga Shopper* – helping to make sure that we bring you those essential tips and techniques to let you get the most out of the Amiga."



**We've got a new face on the AS team – that of Gus Chandler. Hello Gus!**



**P**icture your Amiga Cowboy as a mathematician, complete with white lab coat, chalk and blackboard, thick glasses and stetson. The reason for this radical change of image – a new program from Parth Galen called *FasTrig*. It speeds up program execution, and... well, let's hear what my arithmetical alter-ego, Professor Fuzzywig, has to say about it. Take it away, Professor!

"Ah, yes, quite. Hrrumph, now listen up you lot. There are four trigonometric functions used in almost all graphic, video, audio, simulation and engineering computer programs. Whichever of these applications you are constructing, the sine, cosine, tangent and arc tangent will probably be vital to the code you write. And if they are, they are also a critical bottleneck to your program execution speed. What can you do? Learn to live with slow programs? Or buy an accelerator?"

"If you're faced with this situation, perhaps you should talk to the folks at Parth Galen. Their new program, *FasTrig*, is a package designed to replace the conventional transcendental function library routines most frequently used by application programs. *FasTrig* consists of a set of four object modules that allow the rapid software computation of the sine, cosine, tangent and arc tangent trigonometric functions. Object modules can be linked into executable tasks. The system is intended for use by programmers in code that requires high execution speeds, which means that it will not increase the speed of an existing program without first re-coding, re-compiling and re-linking the program.

## ETERNAL TRIANGLES

"What's that? You're worried about compatibility? The object modules work on any Amiga, and with any of the floating point libraries you may be using. All *FasTrig* modules were compiled from C or assembly language code using the SAS-C (or 'Lattice-C') version 5.10 development system. Object modules will work when called from code compiled by other systems, but source code may have to be edited before re-compilation if using other development systems."

Fuzzywig, you old geezer, you are a long-winded buckaroo. Why don't you mosey on over to the saloon and have a cold one on me?

"I don't mind if I do. But before I go, I need to say that the suggested retail price for *FasTrig* is \$55. The 60-page booklet, *Fast Trigonometry Using Binary Integer Arithmetic* can be purchased separately for \$5.50. Contact Parth Galen, PO Box 482,

Cold Spring, MN 56320, USA ☎ 0101 612 685 8871."

Sheesh – Fuzzywig talks faster than a carpetbagger caught on an electric fence! OK, back to our more usual business. If you get tired of typing or wiggling your mouse, then this next one might be for you.

## A TOUCH OF CLASS

Turn any 13- or 14-inch display into a touch monitor! MicroTouch Systems Inc has introduced the QuikPoint GX140, a plug-and-play universal touch screen solution that easily snaps onto the front of any 13- or 14-inch monitor. The GX140 offers both quick integration and high touch performance to developers wanting to add touch capability to their multimedia, kiosk, training or other computer-based applications.

The GX140's controller card can be fitted on the PC bus, or can reside in a stand-alone box which connects to the computer's serial port. Installation, including the one-off calibration procedure, requires less than three minutes (your Amiga Cowboy's average attention span).

The MicroTouch screen consists of an all-glass sensor that has a uniform alternating current ('AC') electric field spread over its surface. When a user makes contact with the sensor, it 'capacitively couples' to the electric field, drawing current to the user's finger. This technique is the most sensitive touch technology currently available, with a resolution of 1,024 by 1,024 touch points. It averages down the entire area of finger contact to a single point, giving users pixel-by-pixel control when touching the screen.

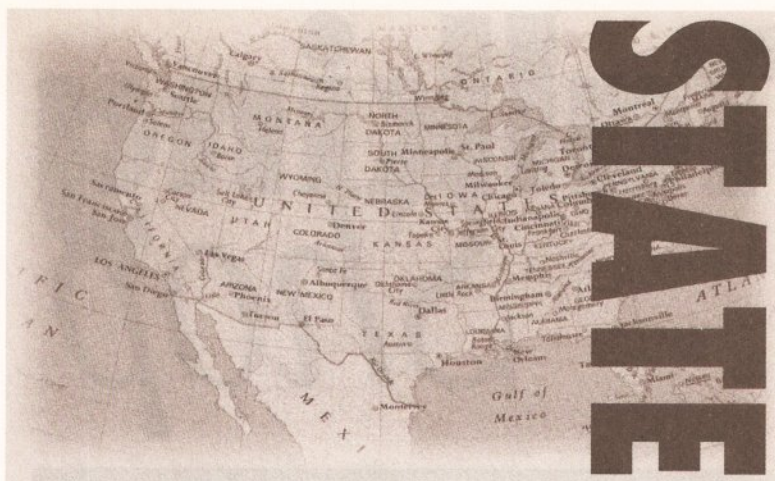
Touch screens are frequently at the mercy of the environment. Contaminants such as water, dirt, dust or grease can degrade the performance of infra-red and sound-wave touch screens. But the MicroTouch capacitive technology is impervious to these factors (I could take it on my next cattle drive), and, unlike pressure-sensing technologies, the GX140 is not affected by vibration or jostling.

The GX140 can be obtained immediately from MicroTouch at a single unit price of \$695. For further info, contact MicroTouch Systems Inc, 55 Jonspin Road, Wilmington, MA 01887, USA ☎ 0101 508 694 9900, fax 0101 508 694 9980.

## SEEING IS REMEMBERING

It must be a hardware kinda month: floptical disk technology is now available for your Amiga. The DMI Floptical Disk Drive provides one answer to the question of "How can I back up my hard drive?"

Each floptical disk looks and handles like a standard 3.5-inch floppy, but stores 20Mb of data at a



## From touch screens to floptical disk drives, Amiga Cowboy Bob Liddil rounds up all the latest products from across the Atlantic

cost of around \$1 per meg! The Floptical Disk Drive requires a standard SCSI interface and is compatible with all Amiga applications, including *AmiBack*, *Quarterback*, *CrossDOS* and *A-Max*.

The DMI Floptical Disk Drive can be obtained from Digital Micronics Inc for \$649. You can contact the company at Digital Micronics Inc, 2075 Corte del Nogal, Carlsbad, CA 92009, USA ☎ 0101 619 931 8554, fax 0101 619 931 8516.

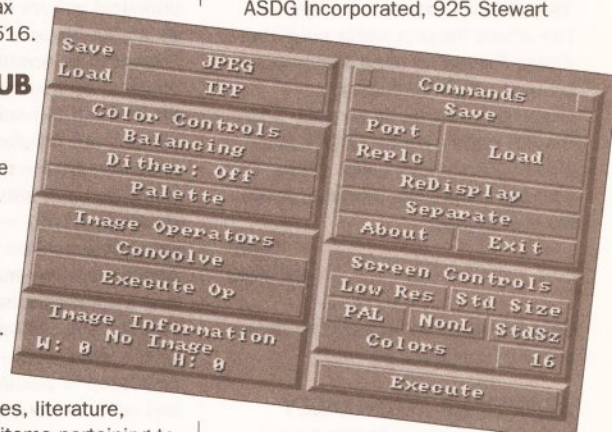
## JOIN THE CLUB

As part of ASDG's continuing commitment to the Amiga community, user groups can now receive free promotional material directly from the company. To receive this material, which includes video tapes, literature, badges and other items pertaining to ASDG's award-winning products, your Amiga group must be registered with the country's Commodore sales company. Officers of Amiga groups which have registered can then request to be put on ASDG's mailing list, and will receive new literature, videos and other materials as they become available.

And why is ASDG doing this? Well, quite apart from wanting user groups to share in the excitement generated by ASDG products, it turns out that the company President,

Perry Kivolowitz, has been fairly active in user groups himself, and actually co-founded the second US Amiga user group. "Having been a user group president," Mr Kivolowitz said, "I know how passionately user group members want to be on the leading edge of Amiga developments. I also know how hard it is to get good quality materials for user group consumption."

Interested parties can contact ASDG Incorporated, 925 Stewart



User groups! ASDG would like to keep you right up to date about Art Department Professional

Street, Madison, WI 53713 ☎ 0101 608 273 6585.

## INTO THE SUNSET

Well, it's time for me to join Fuzzywig over at the saloon for a cool pint pot of ale (that's what he calls a cold brewski – he seems to speak a different language!). So it's whoopee-tie-yi-yea and so long pardners – Amiga Cowboy will be back soon! **AS**



# Talking Shop

Welcome to the Amiga world's liveliest letters pages – where you get the chance to speak your mind. So join your host, the editor, Cliff Ramshaw for some more no-holds barred bantering. All you have to do to be included is send your missive to: 'Talking Shop', *Amiga Shopper*, 30 Monmouth St, Bath BA1 2BW. Get to it!...

## TYPOGRAPHIC TALES

After reading through Issue 22 of *Amiga Shopper* I've noticed more errors, or 'typos' as you call them, than usual. Perhaps this is because it was David Green's first day as Production Editor. I refer to the strange positioning of the picture of the AS Shareware Disk on page 13, amid two columns of articles with nothing whatsoever about the disk; the repetition of "to let" in the 'Question Of Royalty' on page 41. The advert for your sister magazine *Amiga Format* on page 132 was a cracker – "oprogramming labguage"; and lastly on page 151 the dot matrix printer LC200 is 9-pin not 24. I know: picky, picky. Try docking his pay per mistake: it will work wonders!

'Dave'  
Hereford

Dock his pay? We've taken Mr Green out and had him shot.

## STARTING MANUALLY

I have had my new A1200 for two weeks now after having used an A500 for the past two years. The machine is as good as the reviews promise but Commodore *must* learn to include manuals for all the software. The *A1200 Users Guide* and *Workbench 3.0 Manual* are just not enough – if I hadn't had any previous experience of the Amiga operating system I would be stumped. I must point out that I am a computer engineer by trade, and I must say that the Amiga's manuals are pathetic. I have moved to

Workbench 3.0 straight from 1.3 and so have missed the 'learning curve' associated with WB2 (or was the documentation of that hopelessly inadequate as well?). At least with WB 1.3 there was a fairly technical *Enhancer Software* manual including all the available commands. As for ARexx – powerful it may be, but without documentation it is next to useless.

It shouldn't be left up to the technical writers in such magazines as *Amiga Shopper* and *Amiga Format* to de-mystify the software provided by Commodore. Imagine the furore if Microsoft started sending out Windows with no documentation – the PC community would be up in arms. However, since apparently nothing short of divine intervention can budge Commodore, we must all be grateful that such magazines go some way to filling the obvious need. So, keep up the good work – I am now dedicated to scouring your pages to find out how my machine works!

Paul Sims  
Derbyshire

I couldn't agree more. Commodore's attitude seems to be that nobody will use their computers for anything other than using pre-written software. If you do want to go further, then you're forced to spend substantial amounts on manuals, though, to be fair, a line has to be drawn somewhere – it's completely impractical for Commodore to include complete documentation with every Amiga sold.

## FALSE SCRIPTURES

I would like to voice my concerns about software houses that use script files to install their programs and other associated files onto a hard disk. In theory this is an excellent way to copy programs and files to the correct place on a hard disk with the minimum of user intervention. For a novice this may be the only way to do it.

However it can and does cause problems for Amiga users. At present there are Amiga users out there using Workbenches 1.2, 1.3, 1.3.2, 1.3.3, 2.0, 2.04, 2.05, 3.0 and the various upgrades in-between some of these.

Some of these installation programs copy files from the C, Devs, L and Libs directories of the program disk and overwrite the existing files in those directories already on the hard disk. In many cases later versions are supplied but, by the same token, earlier versions overwrite later versions and this is especially true for people with Workbench 2.04/5 or 3.0 when the new program files are for WB 1.3. Some files are put onto the hard disk when they are not even required as a later version is already written into Kickstart.

We have to remember that there is still a lot of software in the shops that was written before the A600, A1200 or A4000 were born.

I do not have an answer to the above, but believe that it needs some thought from somebody. All I know is that it has caused problems for myself and my A4000/040. Could it be that it is this that is partly responsible for some of the compatibility problems that occur?

Paul W Hazeltine  
Tonbridge

This could well be the case. Commodore itself seems unable to get it right. How many owners of A600s discovered that they had the wrong version of the diskfont library on their Workbench disks and were unable to load *Fountain*?

A good stop-gap measure, which I've seen used by some recent public domain programs, is to include several different installation scripts. The user need only click on the script for his or her version of Workbench.

## TO PRAISE, NOT TO BURY

I am writing to defend Commodore's policy. People still complain about the A600 being too much like the A500, and now claim the A1200's specification is not enough because it does not look as good as the Falcon's. The A600 is the saviour of A500 owners (with Workbench 2). Software will be written for the A600 that A500 owners can use. I think it is important to recognise

that Commodore could have not bothered with the A600, gone straight to the A1200 and cut out the million or so A500 owners – as Kelly Sumner said, "there is no way we're going to allow our user base to suffer". Thank-you for the A600.

On the subject of the new Amigas' specification – it has always been stated that the Amiga will undergo constant evolution rather than revolution (witness the very large incompatibility problems with the Atari STE and Falcon). We can be assured that improved sound is on the way, otherwise the Paula chip would have been improved. It is also important to realise that the Amiga's future is assured. Because the A600 and 1200 have already sold in large numbers they are now standard machines. I do not think we can be sure of Atari's future.

Lastly, I know a lot of people have said this but it would be nice to see the new DSP arrive in a blaze of glory in the A2400 (which I think will be the true Falcon opponent).

Richard Grassam  
Scarborough

An interesting assessment. I'm sure that Kelly will be pleased to read it.

## YOU WIN

I bet you won't print this letter...

You're right.

## BOUQUET OF BLESSINGS

I have an idea for occasional inclusion in future issues: all too often readers write in recounting grim experiences in dealing with suppliers. How about a 'bouquets' column instead, then perhaps the baddies might strive to be goodies. For starters, I offer you Gordon Harwood Computers. I found myself in the Alfreton area a couple of weeks back and went in on the off-chance that the shop might have a copy of *ProDraw* (my local dealer couldn't find a wholesaler who handled it). The people in the shop were unable to help but this didn't stop them from taking an obvious interest in what I get up to on my set-up, even to the extent of making it clear that I was welcome to call in any time – even if only to seek help and advice.

M David Eccleston  
Tamworth

What a smashing idea. In view of which, I'll print this letter too...

## YET MORE PRAISE

Firstly let me thank you and your staff for an excellent magazine. I am in my second year of subscribing to what I consider the best source of information about these new-fangled computers.



I am writing to you to praise from the rooftops Meedmore Cables of Liverpool. I have recently purchased a device from another of your advertisers and, on requesting some technical information, discovered that the company's helpline was non-existent. However, Meedmore not only supplied the cables I needed, but also gave answers to all my queries in terms that even I could understand.

I would also like to thank Mark Smiddy for his advice which enabled me to sort out the supplier of my equipment, which turned out to be incompatible with my A1200.

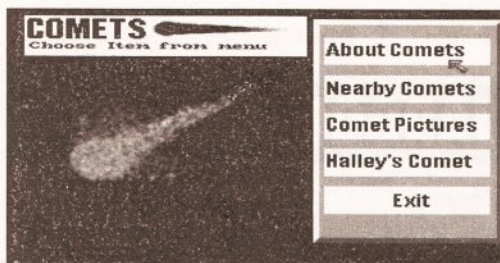
Keep up the good work.

WE Turnbull  
Liverpool

Now, we don't normally print letters praising us, but in this case, since the compliments are spread between us and Meedmore, we'll let it go!

## THE WAY AHEAD

As a graphic designer hoping to use the Amiga to develop interactive multimedia I am encouraged by the A1200 and the recent disclosures concerning the AAA chip set. Some of your readers seem to take a narrow view of the future and overlook the fact that home computers are nearing the limits of human visual and audio perception. When we have 24-bit graphics and 16-bit sound as standard there is little more to go after besides faster



Multimedia applications – should we be concentrating on what the Amiga does best?

processors. There will soon be several platforms with this capability and the only major advantage will be the processors they use and the operating systems they run. People will not choose between machines, but between systems such as WindowsNT, UNIX or PowerOS – and the processors they use, such as the DEC Alpha Chip, Intel's Pentium or the IBM/Motorola/Apple PowerPC. This is where the next battle will take place – judging from Intel's recent ad campaign it's hotting up already.

The hardware is good now and will get better, but we still need that piece of software which has the ability to create or dominate an industry. The Amiga's industry should be desktop video and desktop multimedia production. We

should be discussing the nature and requirements of software for these fields and producing interactive multimedia titles of our own rather than looking over our shoulders. Interactive multimedia is not about CD – it is the communication of information, ideas, entertainment or argument, whether it's 600Mb or 600K. We must concentrate on a public domain bursting with titles before we can claim the industry as our own.

Valan Chan  
West Midlands

I think you've made some very interesting and valid points, Valan. I hope you manage to encourage some exciting debate.

## A COMPLAINT...

I've just read Jason Holborn's review of *Mastering Amiga AMOS* (from Bruce Smith Books) in the March issue, and thought you might be interested in my right to reply, being the author of the book.

The review is out and so that's the end of it as far as the public is concerned, but for the record I'd like to make a few points about the review as I thought it was a bit harsh. Naturally the review is Mr Holborn's personal view, and there's not much I can do to influence that, but I think he might just have missed the point of what the book is actually for, hence this little note.

In the meat of the review he

says that the book doesn't go into enough detail for beginners. He gives an example that the book doesn't tell you how to open a HAM screen. It *does* in fact, on page 92. This is an extraordinary inaccuracy considering the accusations levelled at the book in the review about lack of

attention to detail.

In stark contradiction to the comment about lack of depth he states later on that the chapter on mathematical functions and vectors went into too much depth and that it was boring. Naturally to a programmer who knows all about vectors and how to simulate the motion of a ping pong ball in five lines of code the retelling of such things in detail could seem a little boring, but to a beginner this is new and useful information.

I agree with the point that there isn't a mention of *every* command in the *AMOS* language in this book, but the book was never meant to be a complete manual for *AMOS*, and that was the intention clearly stated in the Preface.

The book was carefully pitched

at a certain market, being aware as I was of the other books which were coming out at the same time. *Mastering Amiga AMOS* fits into this scheme of things. It isn't a manual for the program, none of the books on *AMOS* are and there's no need for them to be. *Mastering Amiga AMOS* is a companion volume to the manual for a very specific market, that is to say people who can't do it yet, those green programmers Jason talked about. It's not a book about learning Basic, or about *every* single aspect of the *AMOS* programming language. It's a book for beginners who already *have* a manual for the program, but need a bit of embellishment to help them get their heads around some of the basic concepts. It's for people who are just starting down the programming road and I think a fair review would have pointed this out in the same way that you would point out that a program is too elementary for the experienced user or too complex for a beginner.

If "the greenest *AMOS* programmers will probably find the subject matter somewhat obvious" then who are the people who write in to Jason's *AMOS* Answers column? In the same issue as the review, we have one person asking about addressing the parallel port, a query about *AMOS* TOME, a piece on *RAMOS*... all very elementary stuff, and all the same sort of topics which in the review on *my* book were beneath his contempt. In the same issue Jason covers the 'Spack' command for compressing IFF screens in his monthly beginner's guide. This topic is covered in my book too and in much the same way. Why is my way bad and his way good? Perhaps the 'ultimate book on *AMOS*' which he talks about is one that he has in preparation? I wonder.

In any event this is not the kind of off-base reporting I expect, especially from a magazine of *Amiga Shopper's* stature.

Phil South  
Somerset

Jason Holborn writes: In the light of what you've said, Phil, I've taken another long, hard look at *Mastering Amiga AMOS* – and I'm afraid I still stand by every point raised within the original review.

Let's start with the coverage of HAM mode. I hardly think that the two sentences *Mastering Amiga AMOS* gives to the subject can be deemed sufficient coverage. If you think you can adequately explain such a complex screen mode in two lines, you're a better man than I am!

Other examples spring to mind. Take dual playfield displays, for

## 'I CAN LARF ABOUT IT NOW'

Have you learned a valuable lesson from the trials and tortures of experience or overcome some mind-boggling problem through incredible ingenuity or even sheer luck? Then let us know and win yourself a fiver into the bargain. Write to 'I can larf about it now', *Amiga Shopper*, 30 Monmouth St, Bath BA1 2BW.

## FROZEN HORROR

I had recently been working on my database, and as I don't have a hard drive I copied my files to RAM for quicker access. After working for a time I started to browse through some of the files on the disk that I had in the drive and came across one named 'WB'. I didn't know what it was so, as I had a utilities program running that will load just about anything, I gave it a click. At this stage I was called away.

When I came back to the computer and moved the mouse to switch off the screen blanker, to my horror all I had was my Workbench screen. I moved the mouse all over the place but couldn't find its pointer. The clock at the top of the screen was not working and the date was six months behind. Then I happen to click the right mouse button and in a flash the clock and date were reset and I could see my database sitting in the background.

Six months ago I had been trying out a utility that saves snapshots of screens as IFF files. Yes, you've guessed it – I had opened a perfect copy of a Workbench screen.

I learned two things from this experience: save regularly to disk and title files more explicitly!

John W Baxter  
Hull

example – although you did include a demo listing, there's virtually no explanation whatsoever of this very complex screen mode. If you feel that beginners would get too bogged down, then perhaps you shouldn't have mentioned dual playfield mode in the first place! Considering the book was 'carefully' aimed at beginners, it just leaves them in the dark time and time again.

The review was certainly not written in an attempt to ensure sales of a book that I am supposedly writing. If this was the case, surely I would also slam other *AMOS* books in a similar manner? As regular readers will know, I've wholeheartedly recommended publications such as Stephen Hill's *Amiga Game Maker's Manual* on several occasions. Sorry Phil, but I still stand by my review. **AS**



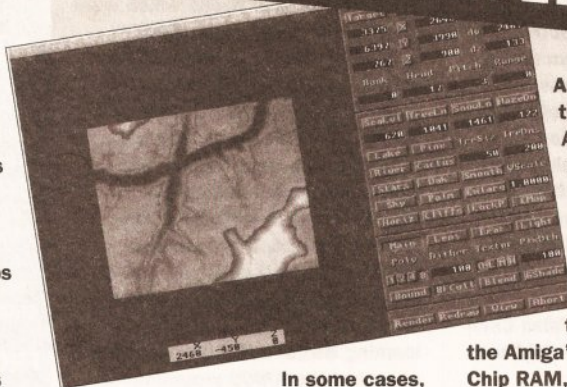
**C**ompared to the motor car, domestic cooker and many other consumer items that we take for granted these days, the home computer is still in its infancy. Little more than thirteen years ago, about the closest most of us ever got to a computer was a chunky pocket calculator. But in this short stretch of time home computers have advanced in leaps and bounds. Chunky black and white displays have changed to almost photographic full colour images, while the plaintive beeps and whistles that amazed early computer fans are thankfully heard no more.

However, all this progress has come at a price – more sophisticated

**"5K was once considered an extravagantly huge amount..."**

computers means more sophisticated programs, which in turn make greater demands of the hardware. Back in the days when ZX81s and VIC-20s roamed the Earth, 5K was once considered an extravagantly huge amount of memory. Remember the old Commodore 64 TV adverts?

## CHIPS WITH EVERYTHING



In some cases, expansion memory is a necessity rather than a luxury. *Vista Pro 2* won't even run in less than 3Mb!

As any Amiga user worth their salt will tell you, the Amiga's memory is split into two main areas – Chip RAM and Fast RAM. The distinction arises because Chip RAM is very special – it's the only area of memory that can be accessed by the Amiga's custom chips. Without Chip RAM, Paula, Agnus and Denise (and their AGA counterparts) would be unable to bring you the scintillating sound effects and

colourful graphics that have become the Amiga's trademark.

Virtually every program you run on your Amiga makes use of Chip RAM – if you run a game, for example, then all its graphics and sounds need to be stored in Chip RAM if they are to be accessible to the Amiga's custom chips. But it's not just 'entertainment' software that can cause problems. Programs which you might have expected to be rather less obvious memory guzzlers also need Chip RAM – when you run a 'serious' application such as a word processor or even a spreadsheet, Chip RAM will automatically be used to store the program's screen display. About the only programs that

Commodore was so chuffed with its new machine's then-massive 64K RAM that the company went to great lengths to compare the C64's memory to that of an elephant (an elephant dressed in boxer shorts, to be more precise!). Then along came the Commodore 128 with a mighty 128K – while the 128 proved to be more of a dinosaur than an elephant, its development proved that the accent was definitely on more powerful computers with more and more memory.

### RAISING THE STAKES

Even the Amiga started its life with very little memory – the basic A1000 came with just 256K, which was barely enough to run Workbench, let alone anything else. Since then, the

continuing development of the Amiga's hardware and the arrival of advanced software such as *DPaint 4* has gradually forced Commodore to increase the amount of memory in a basic Amiga to a minimum of 1Mb (four times that of the original A1000!). With the release of the A1200, its faster processor and more powerful graphics chips, Commodore has upped the ante still further by fitting the machine with 2Mb. A few years back, that sort of memory capacity would have been considered colossally excessive!

But times change – these days even 2Mb isn't nearly enough if you use your Amiga seriously. Although a 2Mb machine will happily run virtually all games and quite a few serious applications, the increased burden

imposed by those new 'AGA' screen modes can quickly eat up lots of RAM. Think about it – if you open up a 1280 by 512 screen in HAM-8

**"...that's almost a megabyte gone before you've even started."**

mode (which uses 8 bitplanes), it alone will swallow up over 650K of valuable memory. Run Workbench as well and that's almost a megabyte gone before you've even started.

## JARGON BUSTERS • JARGON BUSTERS • JARGON BUSTERS

**Auto config** – A very clever system built into the Amiga's operating system that allows the machine to automatically recognise the presence of extra RAM.

**Bit** – The smallest measure of memory capacity is the bit. A bit can contain either a 0 or a 1. It stands for Binary digit.

**Byte** – A byte consists of either 8 bits or 2 nybbles, depending upon how you look at it.

**Chip RAM** – Chip RAM is an area of memory inside the Amiga that is used by the Amiga's custom chips to hold graphics and sound data. If this data is held in any other part of the Amiga's RAM, the custom chips will not be able to access it. Most Amigas offer 1Mb of Chip RAM, but newer models offer double this, allowing you to produce bigger and more colourful pictures and longer sound samples.

**DRAM** – Dynamic RAM. DRAM chips are the most popular type of RAM chip used on the Amiga. Available in a number of different sizes ranging from 32K to 512K, DRAM chips provide a cheap and effective method of expanding your Amiga's memory.

**Fast RAM** – The opposite of Chip RAM is Fast RAM, an area of memory that is used exclusively by the Amiga's central processor. Because the custom chips don't have access to it, the processor is able to access it at full speed (hence the 'Fast' tag). It is in this area of memory where programs are stored.

**Kilobyte** – Expressed in 'K', a kilobyte is 1024 bytes.

**Long word** – 32 bits, 2 words, 4 bytes or 8 nybbles.

**Megabyte** – A megabyte (Mb) is 1024 kilobytes.

**Nanosecond** – The speed of memory chips is measured in nanoseconds. As a general rule, the lower the nanosecond rating, the faster the chip.

**Nybble** – Next up on the memory capacity scale from the 'bit' is the nybble. It consists of 4 bits.

**RAM** – Random Access Memory. RAM acts as a sort of workspace that your computer uses to store programs and data on a temporary basis.

**ROM** – Read Only Memory. Inside your Amiga is a ROM chip that contains the Amiga's operating system. As its name suggests, ROM memory can only be read, not written to.

**SIMM** – An acronym for 'Single In-line Memory Module'. SIMM chips are becoming increasingly popular because of their ease of fitting and relatively low price.

You don't buy SIMM chips individually – because SIMM chips are surface mounted, they're sold in groups of eight on a PCB board. This then forms what is commonly known as a 'SIMM module'.

**Slow RAM** – Also known as 'Slow Fast RAM', this is an area of memory populated by A500 RAM expansions that fit to the trapdoor connector.

**Word** – 16 bits, 4 nybbles or 2 bytes. A 16-bit processor such as the Amiga's 68000 is capable of reading whole word values.

**ZIP** – Short for 'Zig-Zag In-line Package'. ZIP chips are simply higher capacity DRAM chips except for the fact that they are a different shape. Instead of having a line of pin connectors along each side, ZIP chips stand one edge and have all their connectors along one side.



don't require Chip RAM are CLI-based utilities, but even then the Shell window from which they are run must be stored somewhere in Chip RAM for Denise to be able to redraw the screen display.

### BUILT-IN LIMITS

Early Amigas allowed a maximum of 512K of Chip RAM. This was OK for games and less memory-intensive programs, but these days 1 or even 2Mb of Chip RAM is pretty much standard. The new A1200, for example, comes complete with a full 2Mb of Chip RAM. The A600 and A500 Plus machines can also address 2Mb of Chip memory, but an additional trapdoor expansion is

required. Unfortunately for A2000 and A1500 owners, Chip RAM on those machines is normally restricted to a maximum of just 1Mb, although they too can be persuaded to recognise 2Mb of Chip RAM when fitted with a board such as the Pro Agnus from WTS Electronics.

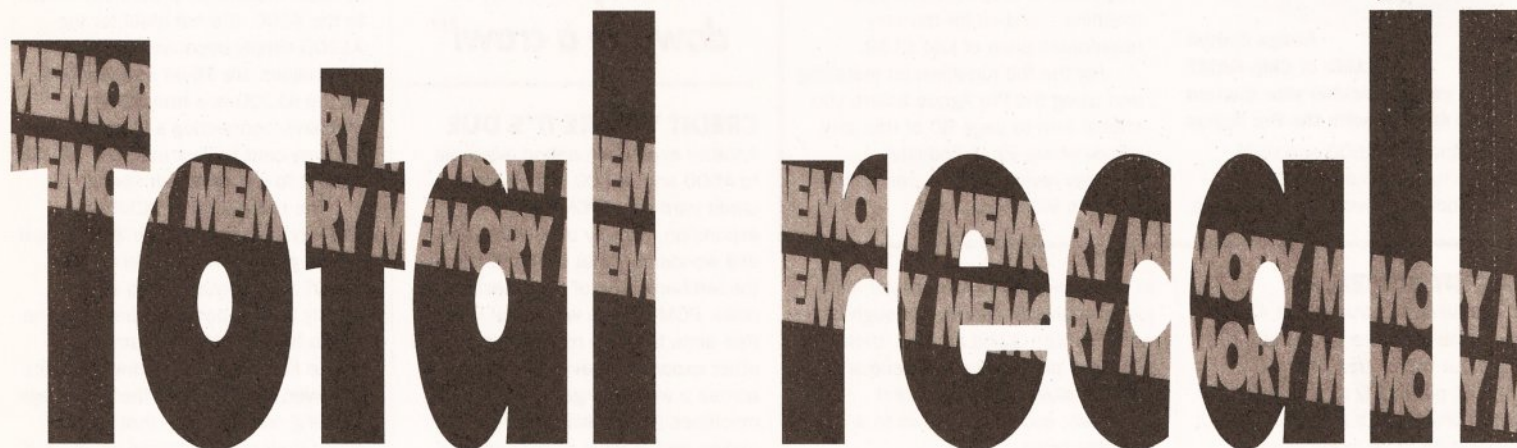
Multitasking can be a wonderful thing, but it's also the fastest way to fill up Chip RAM. Because each and every program that you run eats up Chip RAM, the more programs you run, the faster Chip RAM is used up. Attempt to run programs that open colourful high resolution screens or play sampled sounds and you'll find that your Chip RAM gets used up faster than your monthly pay cheque.

computing circles, this is more or less the same as asking: how long is a piece of string? Put simply, the amount of memory that you add to your Amiga will directly affect the performance of your machine – the more you add, the more you can do. Even if you add something like 4Mb to your system, you can bet that there will come a day when you'll wish you had more.

Of course the other factor you'll have to take into account will be the price. So, to help you make that important buying decision, here's a rough guide to the performance that you'll get from the full range of memory capacities. Note that these figures all include 1Mb of system

● **4Mb:** Almost all serious applications will load and run satisfactorily, though trying to multitask two or more of them together will still cause memory problems. Working with 24-bit images also becomes possible, although you'll undoubtedly start to feel the pinch when using them in heavyweight image processing and desktop publishing applications.

● **6Mb:** As any truly serious Amiga user will tell you, 6Mb is definitely the recommended minimum if you want to get an idea of what the Amiga is really capable of. Multitasking becomes genuinely useful as several related applications



Even an Amiga A600 with the standard ECS chip set can get through memory guzzling applications such as *ProPage* or *Imagine*.

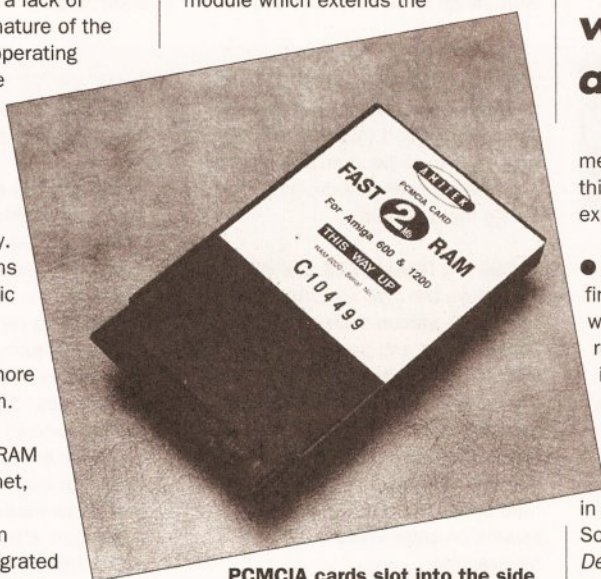
Most 'ordinary' computers aren't particularly plagued by a lack of memory, but the very nature of the Amiga's multitasking operating system means that the RAM requirements of even the simplest of programs can be compounded when several tasks are running simultaneously. Although most programs will multitask on a basic 1Mb Amiga, you can achieve real power computing by adding more memory to your system.

For example, with several megabytes of RAM under your Amiga bonnet, several high level applications can be run together and even integrated through ARexx. Imagine being able to run *ProPage*, *Art Department Pro* and *ProDraw*, together with the ability to exchange files through ARexx without ever having to swap between them. ARexx on an expanded machine really does become a very powerful beast – *ProPage*, for example, can completely control *ADPro* through

ARexx, extending its image processing abilities immeasurably.

### MEMORY MASTER

Of course the solution to all this lies in a RAM expansion, a plug-in module which extends the



PCMCIA cards slot into the side of your Amiga – a quick and relatively cheap method of enlarging the memory of an A600 or A1200

Amiga's memory to allow bigger and more sophisticated tasks to be performed. Most of us realise that a RAM expansion would be beneficial, but the same old question still pops up: how much memory do I need? In

**If there's one thing an Amiga always seems to need, it's more memory. Jason Holborn explains what you should be looking for in a new RAM expansion**

memory, which means that '1Mb' on this chart is equivalent to zero expansion RAM.

● **1Mb:** Virtually all games will run fine and most serious applications will run when no other tasks are running. But virtually all memory-intensive graphics and sound programs will be severely held back – *DPaint*, for example, will get decidedly shirty if you attempt to use the 'spare' screen when in 16-colour high resolution mode. Some programs, notably *Art Department Professional* and *ProPage 4*, will not even load.

● **2Mb:** Programs such as *Deluxe Paint 4* (the 'AGA' version) will run comfortably, but animation will still be rather limited. Reliable single tasking also becomes possible. Although many heavyweight packages will load OK, most will be severely restricted.

can be run concurrently, allowing you to share data between them.

● **9Mb:** For the ultimate in Amiga computing, 9Mb is the sort of memory capacity that dreams are made of – and the most you can

**"9Mb is the sort of memory capacity that dreams are made of"**

usually fit to a standard machine. Multitasking several applications is easy even when working on sound samples and complex graphics simultaneously. In particular, ray tracing and solid modelling programs become very usable.

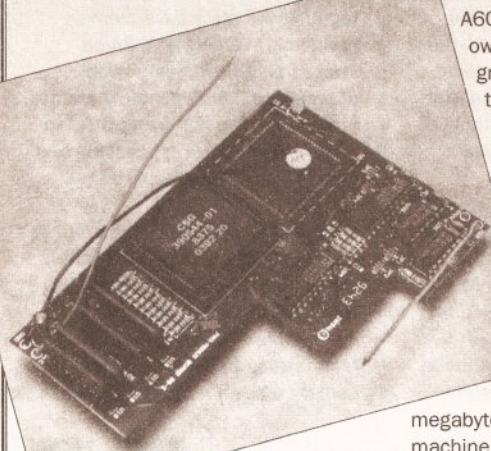


# ENHANCING AGNUS

A600, A500 Plus and A1200 owners who have a whacking great 2Mb of Chip RAM at their disposal?

Well, you need drool no longer – WTS Electronics (which can be reached on ☎ 0582 491949) has the answer in the form of the Pro Agnus card. This is a daughterboard upgrade for the A500, A1500 or A2000 that adds a 2Mb Agnus chip (and an extra megabyte of Chip RAM!) to your machine – and all for the very reasonable price of just £139.

For the full run-down on installing and using the Pro Agnus board, you should turn to page 60 of this very issue, where you'll find Gary Whiteley reviewing it as part of this month's *Video* column.



**Amiga limited to 1Mb of Chip RAM?**

**Now you can double your custom chip memory with the Pro Agnus**

Do you find your A500 or A1500 regularly running out of Chip RAM? Do you look on enviously at all those

## THAT BIT BETTER...

With the advent of true 32-bit Amigas such as the A4000 and the new A1200, not to mention the increasing popularity of processor accelerators, there's an extra consideration to be made when buying a RAM expansion for your machine. Up until the A1200 and A4000 were released, all Amigas were '16-bit' – in other words, they handled all data in chunks of two bytes. With 32-bit processors now the norm, the 16-bit RAM chips used

in conventional RAM expansions no longer make the grade. Although they will work with 32-bit Amigas, their presence produces a 'bottleneck' that will slow even the fastest processor accelerator down to a veritable crawl.

If you want your A1200, A4000 or indeed any Amiga fitted with a processor accelerator to run at full pelt, then you must buy 32-bit RAM chips. Now, expanding the memory of an A4000 is very easy indeed because it comes as standard with

slots to accept industry standard 32-bit SIMM modules.

However, expanding the A1200 with 32-bit RAM is slightly more complicated because a separate 32-bit RAM card must be bought. Several companies have announced A1200 RAM expansions, but – to date – only a single manufacturer has been able to deliver the goods. And even then, expanding an A1200 is not cheap.

***"a bottleneck that will slow even the fastest processor down to a crawl"***

## CREDIT WHERE IT'S DUE

Another expansion option available to A600 and A1200 owners is a credit card-sized PCMCIA memory expansion. For any of you who are still wondering what that little slot on the left-hand side of your machine does, PCMCIA is a wonderful idea that aims to make memory cards and other expansion devices standard across a whole range of different machines (which includes other makes and models of computers – not just Amigas!).

PCMCIA, which stands for 'Personal Computer Memory Card International Association', is a brave attempt at a new expansion standard which has been adopted across a wide range of personal computers.

Although designed specifically for RAM expansions, PCMCIA is also capable of a lot more – there are already rumours that several leading Amiga manufacturers are working on PCMCIA-based hard drives, sound samplers and modems.

## GET SMART

Existing PCMCIA memory cards come in two main forms – 'D-RAM' cards and 'S-RAM' cards. D-RAM cards are by far the most common, simply because there is a greater demand for them. A D-RAM card is, in fact, just another form of memory expansion and they are available in either 2 or 4Mb sizes. A1200 users should be careful though – while a PCMCIA expansion is perfectly suited to the A600, it's not ideal for the A1200 simply because all PCMCIA expansions are 16-bit memory only. As the A1200 is a true 32-bit machine, connecting a PCMCIA memory card to your machine will not allow it to run at its full speed.

The other form of PCMCIA memory expansion is the S-RAM card or – to give it a better name – the 'smart card'. Smart cards aren't strictly RAM expansions because the Amiga treats them as a storage device like a hard disk (device CCO:). However, they do have the advantage of being non-volatile – that is, they retain their contents even when your Amiga is switched off, thanks to a battery that keeps the RAM chips charged. We won't be covering S-RAM cards in this feature, but it is still important that you are aware of the differences between them and D-RAM cards.

# CHIP SHOP

To the uninitiated, a RAM chip may be just be a RAM chip, but it's important that you realise what different types of memory circuit are available if you are to make the right buying decision. This becomes particularly important if you buy a RAM expansion board that has space for further expansion.

Say, for example, you buy an 8Mb board which is populated to 2Mb. If you decide at a later date that you want to expand it further, you need to know the exact type of chip that is required. RAM expansions come in different sizes, so they cannot be mixed. The speed of a RAM chip is important too – the lower the nanosecond rating, the faster the chip. The speed rating of the chips you require will be stated in the RAM expansion's manual, so do check this before buying.

The pricing of RAM chips is also very important. Although a particular RAM expansion may seem an attractive proposition when you first buy it, it could all go horribly wrong if you discover later on that your new acquisition will cost an arm and a leg to populate. Here's a quick rundown of the most commonly used chip types on the market and their approximate prices. It's important to remember that RAM chip prices are still very volatile, so don't be surprised if prices suddenly drop or – worst still – shoot up.

● **256 x 1 DRAM (cheap!):** Up until a couple of years back, the 256 x 1 DRAM (Dynamic RAM) chip definitely ruled the roost. Although very cheap, their limited capacity (32K) meant that RAM expansion boards had to be huge, just because you needed

sixteen of these for every 512K of memory. Most early A500 trapdoor expansions used this chip, but these days they have become less popular – you won't even see them on the Amiga motherboard.

● **256 x 4 DRAM (£55 per Mb):** Nowadays the 256 x 4 DRAM chip is far more common than its predecessor, and can be found in both the Amiga itself and most RAM expansions. Each chip offers 128K of memory, so only 4 of them are needed for each 512K bank. You'll find this chip used in quite a few hard drives that offer memory expansion capabilities – the A590, for example.

● **ZIP (£40):** These 256K x 4 chips are just starting to come into common usage on larger expansions thanks to their high capacity. Each chip offers 128K of storage. A larger capacity 1Mb x 4 ZIP is also available enabling large RAM capacities to be fitted into a minimal amount of space. ZIP chips are used extensively

within the A3000 and various third-party RAM expansions such as the SupraRAM 500RX.

● **SIMM (£50 per 1Mb x 8 Module):** As far as memory chips are concerned, SIMMs (Single In-line Memory Modules) are definitely where it's at. Not only are they used as standard on the Amiga 4000, but many third-party large capacity RAM expansions use them in preference to ZIP chips. One big advantage of SIMM modules is their ease of fitting – instead of having to carefully fit each and every chip in their holders, SIMM modules have several chips on a tiny card which simply slots into place. Plus, the chips in a SIMM module are surface mounted, so they are therefore a lot more reliable than normal RAM chips.

SIMMs are available in a variety of different sizes, ranging from the basic 1 Mb x 8 SIMM (giving 1Mb of storage) to the high capacity 4 Mb x 9 SIMM (4Mb). Both types of SIMM module are used extensively by Commodore and Nexus.



# Buying an *AMIGA* was your first great decision.

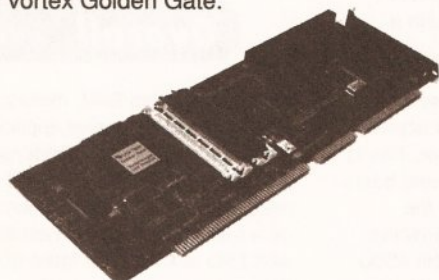
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the versatility, speed and storage capabilities that your Amiga promises.

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- For Amiga 2000
- High-speed SCSI interface
- Includes extra parallel port
- Expandable to 8MB RAM

**GrandSlam! 2000** £179.95



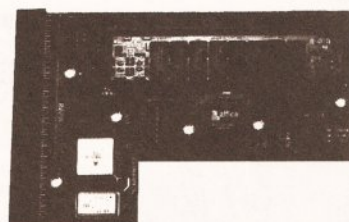
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- Socketted 68881 or 68882
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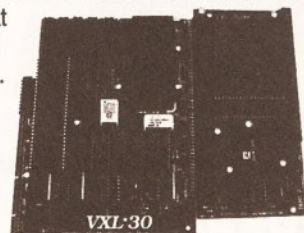
...add the VXL\*32 -- a 32bit 2MB RAM expansion that connects to the VXL\*30.

**VXL\*30**

**£275.95**

**VXL\*32**

**£199.95**



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# A500

**You too could push your A500's memory to its limits – if you play your cards right!**

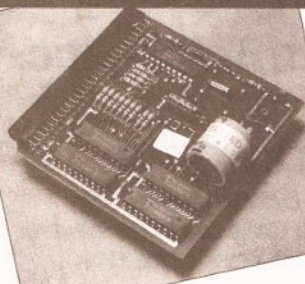
Commodore may have pulled the plug on the A500, but third-party hardware vendors continue to cater for the machine with a vast array of memory add-ons. A500 RAM expansions come in two main flavours – trapdoor expansions and

external bus connector expansions. All trapdoor expansions are what are known as 'Slow RAM' expansions. In other words, any board fitted to the A500 via the trapdoor expansion will not offer the same memory speed performance obtainable

from true Fast RAM cards fitted to the bus connector. This speed difference isn't all that noticeable, though – Fast RAM cards run about 15% faster.

Quite a few manufacturers now offer large capacity RAM expansions that hold as much as 4Mb on a single trapdoor expansion, but you should be aware that these boards require you to fit 'jump' connectors inside the Amiga which will inevitably void your warranty. But if your machine is past its warranty date, these may well be worth considering – although it is still recommended that the boards are fitted by an experienced engineer.

## PC501



### TRAPDOOR EXPANSIONS

**£29.95 Power Computing**  
☎ 0234 843388

Surely there are very few users of the original 1.2 and 1.3-based A500s who haven't already upgraded their machines from the basic 512K to 1Mb of RAM? If you're one of those poor unfortunates still living in the stone age, then Power Computing's

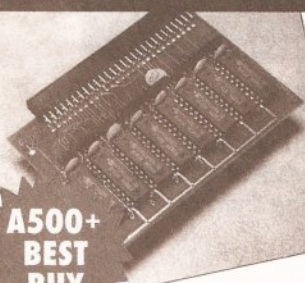
board could be for you. In true Commodore A501 fashion, the PC 501 board connects to the Amiga via the trapdoor port on the machine's underside. Unlike the original A501, Power's board uses the now obligatory 256K x 4 DRAMs which help to keep the board's size and power drain down to a minimum.

Unlike most A500 512K RAM expansions, the PC501 doesn't have a hardware-based disable switch. Instead, you are supplied with a

software-based switch program which stays resident even after resetting your A500. If you want to get all that extra memory back again, you'll need to turn your A500 off for a couple of seconds. The PC501 also comes with a battery-backed clock facility, so it's a pretty complete little board for the price. In all, the PC501 is a well designed little expansion that offers good value for money.

**Overall** ....

## PC501+



**A500+ BEST BUY**

**£35.95 Power Computing**  
☎ 0234 843388

Power Computing has also extended the PC501 to cater for A500 Plus owners, coming up with a brand-new product in the shape of the PC501+. For just an extra £6, the PC501+ provides double the capacity of its little brother, the PC501.

Once again, Power has opted for the 256 x 4 DRAM. Surprisingly

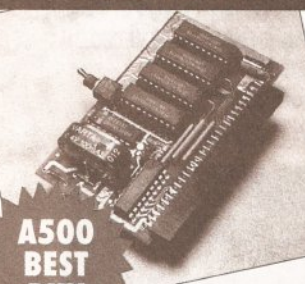
(considering that it uses four extra RAM chips), the PC501+ is actually smaller than its predecessor. This is partly thanks to a much neater board design and the absence of the battery-backed clock facility (which would be unnecessary as the A500 Plus has this built in as standard). It's a very, very neat little board that actually looks quite attractive too (if such a thing is possible!).

When connected to an A500 Plus, the PC501+ provides an extra

megabyte of Chip RAM, making heavily graphic-intensive applications such as *ProPage* and *DPaint* run that bit better. However, the PC501+ really comes into its own when used on a machine fitted with Fast RAM – with 2Mb of Chip RAM fitted to your Plus, multitasking becomes a veritable joy. If you've got an A500 Plus, then this little beauty should be at the top of your shopping list.

**Overall** ....

## ADD501



**A500 BEST BUY**

**£21.00 Ashcom**  
☎ 0530 411485

Ashcom's answer to the PC501s of this world is the ADD501, a A500 half-megabyte RAM expansion card that doubles the machine's system memory to a full megabyte. Virtually identical in specification, Ashcom's card is half the size of the PC501. It too offers a low-drain 4-chip design complete with a battery-backed clock,

but this time the RAM disable function is hardware-based.

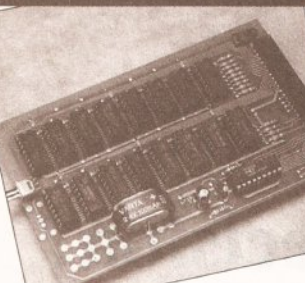
I'm not quite convinced by trapdoor RAM switches – if you need to disable the ADD501, you'll have to switch off and disconnect all the cables attached to the machine in order to reach it. I'm not criticising the ADD501 for this – locating the trapdoor connector on the underside of the machine was a stupid idea in the first place! That said, I think Ashcom should have thought about

taking the same software-based approach as Power.

Gripes aside, the Ashcom ADD501 is a no-nonsense half-megabyte RAM expansion that gets the job done. If you can do without the battery-backed clock, it's available for just £19, which is a hefty £11 cheaper than Power's card. Even the clock card is still £9 cheaper! Highly recommended.

**Overall** ....

## PRORAM A501



**£19.00 WTS Electronics**  
☎ 0582 491949

It may not look particularly stunning, but WTS have done very nicely thank-you out of their ProRAM A501 card for the A500.

Unlike the rest of the half-megabyte RAM cards on test here, the expansion board from WTS Electronics uses the rather aged 256k x 1 DRAM chips that

Commodore used in the original A500 machines. Because of this, the board is quite large in order to accommodate its 16 RAM chips.

So, the technology used in this expansion may not be particularly 'leading edge' stuff, but – on the other hand – no-one can doubt that the card does its job admirably.

As you'd expect, the ProRAM card also adds a battery-backed clock facility using the same Oki clock chip used in virtually all Amiga

RAM expansions. A RAM disable switch is also fitted as standard, but it too suffers from the inconvenient location that plagues all hardware-based switches.

Taking its low price into account, ProRAM has to be viewed as nothing short of a real bargain. To think that A500 half-megabyte RAM expansions cost over £100 little more than a couple of years back!

**Overall** ....



## BUS PORT EXPANSIONS

**£125-285 Ashcom**  
☎ 0530 411485

A trapdoor expansion can only take an A500 so far – you need a bus connector expansion if you want to go beyond the 2Mb limit.

One of the cheapest 8Mb bus connector RAM expansions on the market is Ashcom's excellent AddAx

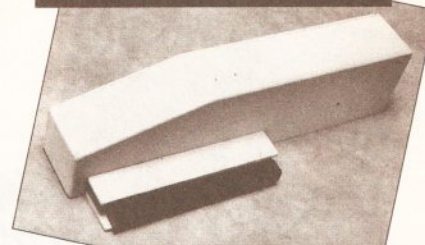
board. Unlike some expansions, the AddAx is very small and unobtrusive, blending beautifully into the curves of the A500. It also offers a pass-through connector, so you can still use your hard disk with it connected.

AddAx manages to squeeze into such a tiny box thanks to its use of high-capacity, low-drain ZIP chips. These also allow the standard Amiga power supply to power the unit, so no external power supply unit is required. But you may start to

encounter problems if other expansion hardware is connected, so a higher rated power supply may still be a worthwhile investment. Even if you buy the 2Mb version (£125), it can be expanded at a later date simply by fitting your own ZIP chips.

Following in the footsteps of Ashcom's 512K expansion, the AddAx board really is something special. It's well designed, cheap and it works well – what more could you ask for?

## ADDAX



**Overall** ●●●●○

**£109-289 Power Computing**  
☎ 0234 843388

If you're looking for a RAM expansion that's well designed and built like a tank, then look no further. Using the same high capacity 1Mb x 4 ZIP

chips as the Ashcom board, the Power board can be expanded from the basic 2Mb to a full

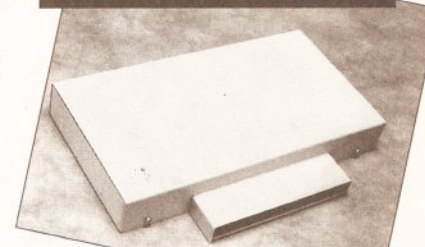
8Mb for a similar price. Although the board is initially cheaper to buy than the AddAx, the price rises above that of the AddAx if you buy the version fitted with a full 8Mb of RAM.

Like the AddAx, the Power board also comes as standard with a bus connector pass-through, though its flat design looks rather odd when wedged between a hard disk and the A500. Power assures me that a new slimline version that looks more like the AddAx will be available soon at

no extra cost. Manufactured from the same sturdy cream-coloured metal, this new slimline board gets my vote for sheer strength alone.

There's very little to separate the Power board from AddAx, but I must admit that I would go for the Power board due to its better quality of manufacture and initially cheaper price tag. If you're in the market for a high capacity RAM expansion, then Power Computing's 8Mb board is very good indeed.

## POWER 8MB BOARD



**Overall** ●●●●○

## A600

With the demise of the A500, some still consider the A600 as something of a poor alternative – just take a look back at our *Talking Shop* pages of a few months ago if you need to remind yourself of the mixed reception the new spec received.

**Who was it who said that the A600 was underpowered? Using its PCMCIA and trapdoor slot with these RAM add-ons, you can realise the full potential of your machine!**

Although large capacity RAM expansions for the machine are still few and far between, it's still possible to expand an A600 all the way up to an impressive 6Mb of RAM via the machine's PCMCIA and trapdoor slots.

Like the A500 Plus, the A600 can also handle up to 2Mb of Chip RAM, so a 1Mb trapdoor expansion should be right at the top of your shopping list even if you think you'll need more than just a basic 2Mb on board.

## TRAPDOOR EXPANSIONS

**£44.95 Ashcom**  
☎ 0530 411485

Ashcom has stormed the A600 market with a vengeance with the launch of the AX601, an offering for A600 owners who need that bit more Chip RAM.

The AX601 may not look particularly high-tech, but its

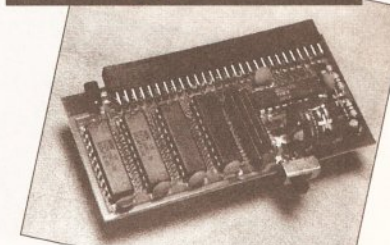
specification is second to none. Once again, it offers a full megabyte of extra Chip RAM and a battery-backed clock, something that Commodore very stupidly left out of the basic A600.

The board that we were sent seemed to have seen better days, but the overall quality of design and manufacture was pretty good. Having said that, it did seem that whoever put ours together had been perhaps a little over-generous with the solder!

Unlike Power Computing's PC601 (reviewed below), the AX601 does offer a very handy RAM disable switch. But, once again, you'll need to switch off your machine, pull out all the cables and flick your machine over onto its back to reach it.

The only thing that really lets the AX601 down is its price – at £7 more than its main rival, the AX601 is quite expensive. Personally, I'd rather buy a ProRAM card and pocket the extra seven quid.

## AX601



**Overall** ●●●●○

**£44.95 Silica Systems**  
☎ 081 309 1111

I would hazard a guess that Silica Systems must be well and truly chuffed with the AmiTek range of A600 products. Not only was AmiTek one of the first companies to produce a PCMCIA credit-card memory expansion for the machine (as discussed in the introduction to this round-up), but it just happens to

do a very nice line in A600 trapdoor expansions too.

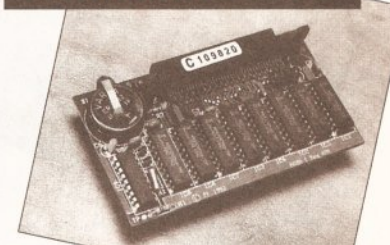
The AmiTek 600 card is a neat little board that looks and performs in a very similar manner to Power Computing's PC601 (reviewed just over the page). Indeed, if it weren't for the slightly greener shade of PCB, one could be forgiven for mistaking the AmiTek card for a Power Computing product.

Like the rest of the competition, the AmiTek card uses the same 256K x 4 DRAM integrated circuits

and also offers a battery backed-clock. And once again, there's no RAM disable switch which I personally find damned annoying. Come on guys! If A500 owners can have disable switches, why can't A600 owners? Even one of those irritating under-the-computer trapdoor ones would be something!

The lack of a disable option wouldn't be so bad if the A500 Plus expansions weren't so much cheaper than their A600 equivalents. Oh well, I guess I'm just hard to please!

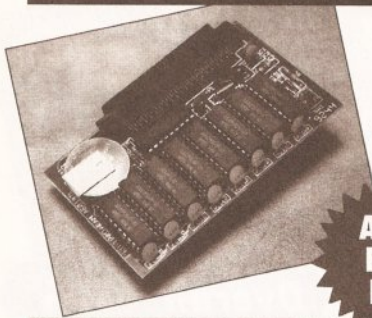
## AMITEK 600



**Overall** ●●●●○



## PRORAM A601



**£38.00 WTS Electronics**  
☎ 0582 491949

The WTS A500 RAM expansion may not be the most exciting board on the market, but in my opinion its A600 RAM expansion is a far more impressive beast.

**A600  
BEST  
BUY**

Based around the now obligatory 256K x 4 DRAMs used in virtually every A500 and A600 trapdoor expansion

under the sun, the ProRAM A601 boasts the same quality of design and manufacture as its main rival, Power Computing's PC601.

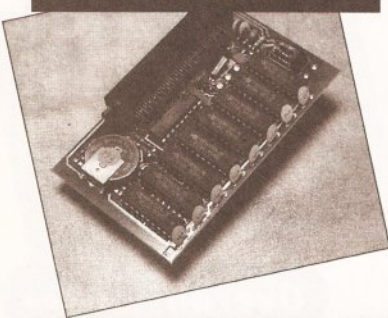
One big advantage of the ProRAM card over Power's card is that its RAM chips aren't soldered directly onto the board, so – in the unlikely event that a RAM chip should give up the ghost the very minute that your guarantee expires – individual RAM chips can easily be replaced without you having to resort to the dreaded soldering iron.

Once again, the ProRAM card offers a battery-backed clock, although it too doesn't offer any form of RAM disable option, something that I feel both Power Computing and WTS should look into – if only to protect A600 owners from the taunts of those with A500s!

But at £2 cheaper than the PC601, my money's definitely on this little beauty. If you own a 1Mb A600, then get this board.

**Overall** ●●●●

## PC601



**£39.95 Power Computing**  
☎ 0234 843388

Power Computing does it again! Not content with having already snapped up some pretty mean ratings for their A500 RAM expansions, the lads (and lasses!) at Power Computing bring you the PC601, a spiffing little 1Mb RAM expansion that you can pop straight into your A600 for a very reasonable £40.

Using the same 256K x 4 DRAM chips as its A500 counterpart, the PC601 is a neat little board that fits perfectly snugly onto the A600's trapdoor connector.

As you'd expect, it too offers a battery-backed clock facility, although sadly lacking from the board is any form of RAM disable option. Well, fair enough, I suppose it could be argued that 2Mb of Chip RAM is unlikely to trip up very much software, but it still would have been nice to have had

the option available – just in case your favourite game or PD title falls flat on its face when it runs into something it isn't quite expecting.

Gripes aside though, the PC601 is a elegant little board that is well worth investigating. It may not be the cheapest option available, but then who's going to worry about the odd pound or two when a board's as well designed as this?

**Overall** ●●●●

# A1500/2000

If 'expandability' is all-important to you, then the A1500 and A2000 Amigas are the perfect machines to own. Due to their modular design and more than generous expansion

space, they can be expanded above and beyond their basic 1Mb specification with ease.

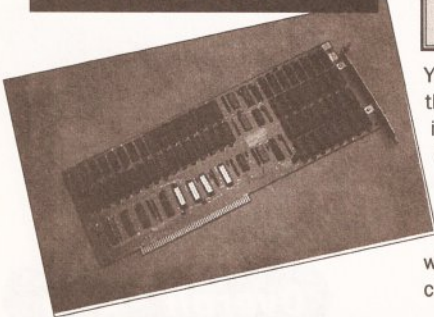
What's more, both machines are capable of taking extra RAM

internally via expansion cards that connect to the machines using their Zorro II slots. Many cards come populated with a minimum of 2Mb of RAM – more can easily be added by

purchasing more chips. Most A1500 and A2000 RAM boards use either high capacity 1Mb x 4 DRAMs or 1Mb x 8 SIMM modules, which can both be bought reasonably cheaply.

**These high-specification Amigas are by far the easiest to expand – thanks to the mark of 'Zorro'**

## A2056



**£149 Commodore UK**  
☎ 0628 770088

You might expect great things from the company that gave us the Amiga in the first place, but Commodore has never been renowned for its peripherals! The A2058 isn't a bad little board, but it is starting to show its age, especially compared with the sort of 'do it all' combo-cards that have made GVP very rich.

Specification-wise, the A2058 is a no-nonsense product that gets the job done but little else. Like the Aries 2000 card reviewed below, the A2058 comes as standard with 2Mb of RAM ready to plug in and go.

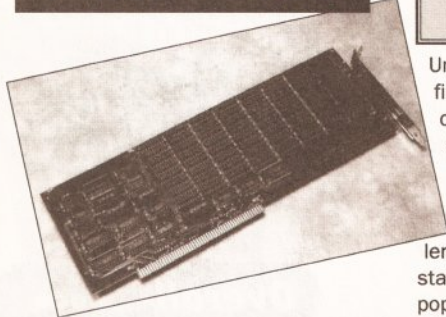
Fitting the card is pretty straightforward – open up your Amiga 1500 or 2000, locate a spare Zorro slot and drop the card in. It really is that simple. Then, thanks to the wonders of the Amiga's Auto-Config hardware, the Amiga automatically

takes advantage of the extra Fast RAM provided by the card.

The A2058 is a full-length card that stretches all the way across your machine – take it from me, this is hardly VLSI (Very Large Scale Integration)! Extra memory can be added in 2Mb increments using standard 1 Mb x 1 DRAMs, so the board can be upgraded for a fairly reasonable price (about £50 per Mb).

**Overall** ●●●●

## ARIES A2000



**£129-249 Power Computing**  
☎ 0234 843388

Unlike most of Power Computing's fine range of expansions, this offering for A1500 owners is actually produced by Integrated Memory Products, an American hardware manufacturer.

The Aries 2000 is a full-length Zorro II board that comes as standard with 2Mb of RAM (or fully populated to 8Mb for £249). Extra

memory (up to 8Mb) can be added in 2Mb increments using commonly available 1Mb x 1 DRAM chips rated at a rather slow 120 nanoseconds. Each time extra banks of RAM are added, jumpers on the board must be set to allow the Amiga to recognise the extra memory.

In many ways, the Aries board is very similar to Commodore's own A2088. Indeed, it offers the same expansion possibilities and even uses the same RAM chips. However, one thing that can be said about the

Aries board is that its quality of manufacture is certainly better than Commodore's offering.

The price also makes it a very attractive proposition if you already own a hard disk and therefore don't require the extra bits and pieces offered by GVP's kit. To sum up, the Aries card is a nice no-frills add-on that gets the job done for a sensible price. Once again, Power Computing sets the standard!

**Overall** ●●●●



**£149 Silica Systems**  
☎ 081 309 1111

With GVP dominating virtually every area of Amiga expansion, you'd be a fool not to check out the options on offer down at Great Valley

**A1500  
BEST  
BUY**

Products before handing over your hard-earned cash. GVP's main A1500 memory expansion

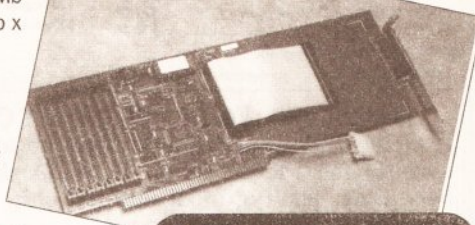
is the HD8+, which does a whole lot more besides increasing your RAM.

For starters, if you don't already own a hard disk controller, then the HD8+ can also be used to drive any standard SCSI hard disk. A hard drive can be mounted directly onto the card, leaving those vital drive bays clear for further expansion. And, because the HD8+ offers all this on a single card, a further Zorro slot is left free by not having to fit a separate SCSI controller.

Although the basic HD8+ doesn't

come with any RAM as standard (this should be taken into consideration when comparing it with other products), it can handle up to 8Mb of Fast RAM using standard 1Mb x 8 SIMM modules at a cost of around £50 per Module (each module offers 1Mb). Although the GVP card is initially expensive, you get what you pay for. If you don't already own a hard disk, then the GVP HD8+ is the only choice – in the long run, you'll save yourself a lot of money!

**GVP HD8+**



**Overall** ●●●●

## 1200 OPTIONS

With its massive 2Mb of memory as standard, the A1200 certainly isn't starved for RAM. But try to use it for any form of serious work, and you'll soon come to realise that a RAM expansion is definitely required.

We had hoped to bring all you A1200 owners a round-up of the current state of the art in A1200 expansions, but – time being our worst enemy – all the A1200 boards that we chased up either failed to arrive in time or simply weren't ready for review. It seems that the A1200 is such a new machine that hardware vendors are still hard at work on the next generation of RAM expansions.

### MORE THAN JUST A MEMORY

Several well-known RAM expansion manufacturers were able to confirm that 32-bit A1200 RAM expansions are waiting in the wings. What has become apparent is that very few of the boards that will be released over the coming months are just RAM expansions – nearly all the A1200 RAM expansions that we were told about offered some form of extra expansion capability.

Take GVP's new range of A1200 expansions, for example. GVP is currently working on two new expansion boards for the A1200 – an A1230 and the 'Fang' board. The A1230 not only provides space for up to 32Mb (yes, 32!) of 32-bit RAM,



**2Mb of RAM isn't enough for what you want to do with your A1200? Fortunately there's plenty of expansion options**

but it also comes as standard with a 40 MHz 68030 processor accelerator with provision for a maths co-processor. GVP has based the A1230 around its existing A530 board for the A500, although no hard drive interface is included. How much for all this power? How does £399 with 4Mb of 32-bit RAM installed grab you?

On the other hand, the 'Fang' board offers up to 8Mb of 32-bit RAM, a SCSI hard drive interface (let's face it, the A1200 needs it!) and space for fitting a maths co-processor. Once again, GVP is looking at a price of around £399 for this little bundle of fun. For more details, contact Silica Systems on ☎ 081 309 1111.

### SPEED FIEND

But if you just can't wait for GVP's expansion boards, then you may be interested in the new MBX1200 board from MicroBotics. The MBX1200 connects to the A1200 internally via the machine's 150-pin edge connector and offers up to 8Mb of 32-bit expansion using commonly available SIMM modules.

It also has space for fitting either a 68881 or 68882 maths co-processor, speeding up math intensive applications by a factor of eight. Fitted with a 14.2 MHz 68881 and no expansion RAM, the MBX1200 retails for around £120 while a faster 68882 board can be picked up for just £60 more. Contact Calculus on ☎ 0532 319444 or the First Computer Centre on ☎ 0532 319444.

If you're quite happy with the A1200's 68020 processor, then you may well be interested in a new A1200 RAM expansion from Power Computing. According to Power, work is progressing on a £200 RAM expansion for the A1200 that can be expanded to 8Mb and can also take a maths co-processor. Although the exact price is still to be finalised, Power Computing feels confident that it can keep the price down, even with 2Mb of 32-bit RAM installed as standard. What's more, the board will also offer a battery-backed clock, something that is missing from the MicroBotics range of A1200 expansions.

And as if that wasn't enough for the A1200, you should keep a look out for RAM expansions from Ashcom and WTS too.

## FEATURES CHART • FEATURES CHART • FEATURES CHART • FEATURES CHART

### A500 / A500 Plus

Product	Price	Supplier	Type	Size	Max. Size	Chip Type
PC501	£29.95	Power Computing	Trapdoor	512K	512K	256 x 4 DRAM
PC501+	£35.95	Power Computing	Trapdoor	1 Mb	1Mb	256 x 4 DRAM
ADD501	£21	Ashcom	Trapdoor	512K	512K	256 x 4 DRAM
ProRAM A501	£19	WTS Electronics	Trapdoor	512K	512K	256 x 1 DRAM
AddAx	£125	Ashcom	Bus	2Mb	8Mb	1Mb x 1 ZIP
Power 8Mb	£109	Power Computing	Bus	2Mb	8Mb	1Mb x 1 ZIP

### A600

Product	Price	Supplier	Type	Size	Max. Size	Chip Type
AX601	£44.95	Ashcom	Trapdoor	1Mb	1Mb	256 x 4 DRAM
AmiTek 500	£44.95	Silica	Trapdoor	1Mb	1Mb	256 x 4 DRAM
ProRAM A601	£38	WTS Electronics	Trapdoor	1Mb	1Mb	256 x 4 DRAM
PC601	£39.95	Power Computing	Trapdoor	1Mb	1Mb	256 x 4 DRAM

### A1500 / A2000

Product	Price	Supplier	Type	Size	Max. Size	Chip Types
A2058	£149	Commodore	Zorro II	2Mb	8Mb	1Mb x 1 DRAMs
Aries 2000	£129	Power Computing	Zorro II	2Mb	8Mb	1Mb x 1 DRAMs
GVP HD8+	£149	Silica	Zorro II	0Mb	8Mb	1Mb x 8 SIMMs



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A500 UK Keyboard - factory new.....	£31.00	A2000 original P/S, 220 volts.....	£69.00
5719 Gary.....	£10.50		
8373 Super Denise Upgrade.....	£21.00		
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Buy the MegAChip from us and we'll give you the new Super Denise for.....£18.00
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- **AdRAM 540 for A500 by ICD:** Add up to 4 Megs of RAM with battery backup internally in your A500. 1 Meg/2 Megs (install up to 4 Megs).....£83.50/£104.25
- **Baseboard 601:** 1Mb chip RAM memory card for A600. Installs in trap door. Contains battery & clock.....£41.75
- **Amiga Troubleshooter:** Easy-to-use symptomatic guide to diagnose faulty ICs on the A500/A2000. Addresses over 30 of the most common problems.....£9.00
- **12 A 'Clock:** Real time clock/calendar (something your A1200 doesn't have).....£21.00

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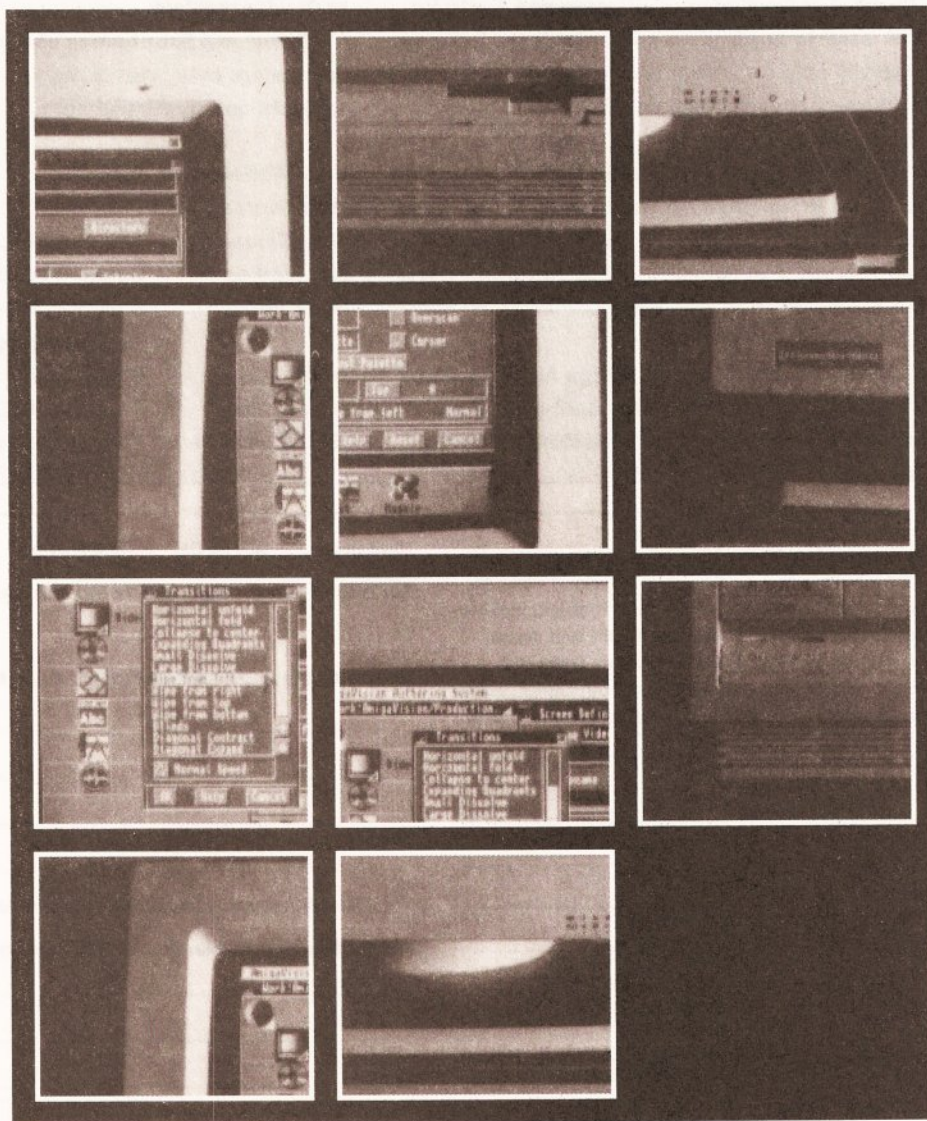
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# AMIGA

ANSWERS



## SLOT IT ALL INTO PLACE

### SO WHAT DO ALL THOSE ICONS MEAN?



**Beginners:** this icon will appear next to any questions which are 'basic' in content.



**General:** this icon is used for any general Amiga-related queries.



**Caution:** be sure that you fully understand the answer before trying it out.



**Danger:** the answer to this question could well invalidate your warranty – or you!



**Hardware:** this icon is used to denote questions relating to general hardware.



**Buying advice:** we use this icon if the question asks us for buying advice.



**Printers:** this icon denotes a query about printers, printer drivers and so on.



**Technical:** any queries about programming will have this icon next to them.



**Video:** this icon relates to any query about using your Amiga with video hardware.



**Music:** this icon is for questions about MIDI, sampling, synthesisers and so



**on. Programs:** any program-specific queries have this icon next to them.



**Comms:** if your question relates to comms, this is the icon that we'll use.







# NO PROBLEM!

Welcome again folks to *Amiga Answers*, the section of the magazine where we endeavour to straighten out your hassles with that wonderful but occasionally stubborn machine, the Amiga. Every month we devote more space and apply more resources than any other Amiga magazine to solving your problems. We receive something like 100 queries a week, so the service is obviously appreciated.

It's my job to co-ordinate the whole thing: sorting through the questions and sending them off to the relevant chappies for the kind of in-depth answers you've come to expect; and compiling them into the lovingly crafted pages which you see before you.

I call on a variety of expertise to make sure you get the answers you need, which is why *Amiga Answers* is so successful. There's Mark Smiddy, industry guru, AmigaDOS-tamer and business applications wizard; Jeff Walker,

probably the most knowledgeable Amiga desktop publisher there is; and Jason Holborn, long-time *AMOS* explorer and PD sampler, as well as good all-rounder (or should that be all round good guy?); and Toby Simpson, lead programmer for Millennium and accelerator expert.

If it's a question about video, I'll pass it on to Gary Whiteley, our professional videographer for whom the word 'genlock' means 'mixing Amiga graphics with video for magical results' and for whom the word 'snipwiral' means nothing.

Programming queries are dealt with by Paul Overaa, who's not afraid to code in any language, and who doubles as a MIDI maestro to solve your sequencing slip-ups.

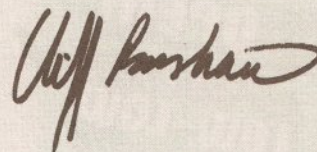
Our hardware guru is Jolyon Ralph. This man knows just about everything about disks, both hard and floppy, and what he doesn't know about memory he's probably forgotten. Communication breakdowns are fixed-up by Dave Winder, while

general Amiga queries are dealt with by the indefatigable Wilf Rees – all in all, a formidable team. Let's face it, if we can't answer your question, it's probably one of the Mysteries of the Universe.

This month we give advice on buying tape streamers and emulators, the best way to perform cross-development, how to track down font errors, and much much more. Toby Simpson's *Code Clinic* on page 39 deals with a C program to calculate blitter parameters.

Keep sending us those problems – the solutions are just around the corner.

Cheers,



## TRACE ON!



I have an Amiga 500 Plus which is equipped with a Microbotics VXL-30

accelerator and 4Mb RAM. I use it mainly for ray tracing with *Imagine* 1.1. After reading about this topic in your magazine, I have a number of questions:

a) Is it possible to upgrade from *Imagine* 1.1 to *Imagine* 2 in the UK without paying the full £269? Or do I have to send off to the US and splash out more on International Money Orders and all that?

b) Is there a 68040 processor for the Amiga 500 Plus? I hear rumours that one is available, but I've never seen anything reviewed or advertised in the magazines.

Since I use my Amiga to take the delights of ray tracing into youth clubs, portability is very important. For this reason I find the new Amiga 1200 very interesting and might purchase one when this wretched recession ceases. Which brings me to:

c) Will the A1200, its screen resolutions, its expansion and any 24-bit boards talk to *Imagine*?

d) Will a 3D package based on radiosity techniques (which can render diffused lighting, soft shadows and such like) ever be available on the Amiga?

Finally, the kids seem to really enjoy what I do and using the accelerator a quarter-screen image can be rendered pretty quickly. When everyone is happy I render the scene up full screen at home and

take it back for viewing the next week. But as you say, *Imagine* is comparatively heavy going.

Humphrey Reader  
 Weston-Super-Mare

The first thing I should say is "Well done" to you Mr Reader – keep up the good work in taking your Amiga images to the masses.

a) The UK importer of *Imagine*, Digital Multimedia Services (previously known as Computech), says that upgrades from *Imagine* v1.1 to *Imagine* v2 are available for around £80, but low demand (and minimum ordering quotas imposed by Impulse, who produces *Imagine*) means that the company won't be doing any upgrades until there is a reasonable number waiting to be done. The good news is that with *Imagine* 3 due out sometime soon (but only available as an upgrade

from version 2) it should be possible to bulk all the orders together and get you sorted out. Call DMS on ☎ 0702 206165 for more details.

b) Yes, the Mercury card from Progressive Peripherals and Software, which is the only one I am aware of. See the advertisements in *Amiga Shopper* for more details.

c) *Imagine* will only display directly to Impulse's own Firecracker board (which is NTSC only) at the moment. However, the rendered images can be displayed by any suitable IFF display device. HAM-8 is not yet supported by *Imagine*, though no doubt it will be in its next incarnation. If you need this mode, a program such as ASDG's *Art Department* can do all the converting for you.

d) I don't know of any in production (which doesn't necessarily mean there won't be),

but it would be nice. The main problem will be speed – as the calculations needed will be massive – so there may never be a large enough market to justify the development. Like everything else, time will tell. **GW**

## KEYBOARD CORNER



I have a very simple problem. I'd like to shift the bulk of my computer equipment

away from my desktop, leaving nothing more than a keyboard and a screen. As I own an A500, I will obviously need an external keyboard. I know that Checkmate produces such an item for £70, but this is rather expensive. Is there an adaptor available that will allow me to connect an A2000 keyboard to an A500?

Also, I plan to upgrade my system in the future, but I'm not overly keen on buying the A1200 simply because it seems to me that the machine is simply more of the same. What are the chances of Commodore releasing a new mid-range machine?

David Powell  
 Warlingham  
 Surrey

Checkmate still produces its external keyboard kit for the A500 but, as you say, it's a little expensive. Unfortunately, no one else actually produces such a kit, especially not in the form of an interface that would

## JARGON BUSTING • JARGON BUSTING

**Accelerator board** – a device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed. An accelerator is useful for calculation-intensive applications, such as 3D rendering.

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continued on page 29





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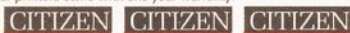
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continued from page 25

allow you to connect up and use an A2000 keyboard (come on all you hardware developers, get to it!). The main problem with such an upgrade would be that the Amiga 2000 keyboard doesn't come cheap. I recently had to buy a keyboard for my Amiga 2000 and I was shocked to learn that their price had recently doubled from a very reasonable £40 to an eye-popping £80. Add to this the price of an interface (if such an item existed) and you'd be paying over £100 for the privilege of an external keyboard. **JH**

## EMULATE IT!



As part of an engineering course I have to complete a module on micro-

processors. Upon reading the small print I discovered the hardware required would be an IBM compatible computer with 512K and Turbo Pascal 5. Is it possible to adapt my A500 Plus to complete these requirements or should I just scrounge the loan of a PC?

**CJ Hudson**  
**Trundra Isle**  
**Shetland**

On the software side you should just be able to get away with a PC emulator – one of the recent software-based ones should be able to do the job (albeit a little slowly). A better option would be a hardware emulator such as AT-Once or the KCS Power PC board. In any case, you should also check whether Turbo Pascal has other requirements, like a hard disk.

The crunch may come if you need to use some PC hardware – such as the internal 8-bit expansion ports. If this is the case your A500 would not do the job and you would have to blag a real PC for the duration. **MS**

## DEVELOPING WORLD



I consider myself a very competent 68000 assembly programmer, but feel

restricted in developing on a single machine. I have, however, recently acquired a fairly high spec PC and would like to use this as my development machine. My question then concerns the cross-assembler. I have heard of a couple: **SNASM** and **PDS68000**. Could you tell me which is the best, how much they cost, and where I can get them? I mostly program games.

**Mark Nixon**  
**Caldmore**  
**Walsall**

This is a tough one. Not because I don't know anything about SNASM or PDS – we have both in the office for development work. The thing is, both products are expensive (SNASM, for example is £2500) and currently make programming legal games software very difficult. The SNASM kit is actually some software, a cross-assembler and a special SCSI system to link the PC to the Amiga (through the expansion connector).

If you've developed on the Amiga, quite why you'd want to subject yourself to working on a PC is beyond me! The advantage of cross development using SNASM and such like is the control over debugging you have. An alternative, for half the price, is to buy a high spec A3000, and develop on that. You can then assemble to disk or use networking hardware to run off the other one – which is how I develop games on the Amiga. That way I get all the advantages of the Amiga's multitasking operating system. It's a sort of half-cross-development and it's a lot cheaper than SNASM. But if you're still interested in finding out more about SNASM, call Cross Products on ☎ 0532 429814. **TS**

## DISAPPEARING DISKS?



On various occasions when I insert a disk in df0: the disk drive light comes on (as normal), the drive clicks a few times, the drive light goes out and then everything reverts back to the Workbench screen! Sometimes I have to insert the disk several times before it will load. The drive seems to recognise a disk has been inserted but fails to load.

Do I require a new drive?

**A Beales, Bures, Suffolk**

I'm afraid the prospects don't sound all that good. What's more, disk drives are usually difficult, and often impossible to repair – for the price of a visit to a repair centre you can just buy a new internal drive which will satisfactorily replace the existing unit. **JR**

## MOVING ON UP



I have recently been toying with the idea of buying an Amiga computer ever since

handing over my Sinclair Spectrum 128+2A to my son. As my finances are limited, I was originally going to purchase an A500 Plus. We have seen this has now been superseded by the A600. I have two problems:

a) With my Spectrum 128+2A I was able to run a Fujitsu M3328B printer directly out of the printer port. I have no manuals with the printer due to it being surplus BT equipment. If I purchase an A600 will this work or will I have to alter the DIP switches inside? And which driver would it use?

b) As I can't afford to buy a monitor at present, I intend to use an Hitachi CPT 1646 colour TV which has a switchable RGB/TV facility as standard. The socket on the TV end is a 7-pin DIN type. I have enclosed the connections for the monitor side. Will this work on an Amiga?

**PC French**  
**Basingstoke**  
**Hants**

A wise decision! An Amiga is a good buy, whatever the model, although I personally would recommend the A1200 for maximum price-performance value, depending of course upon what you want to use it for. So, with that out of the way, let's take your questions one-by-one now:

a) Check the connector on the Fujitsu printer. If the socket is a Centronics 36-way connector (about 5cm wide, 1.5cm high and wedge-shaped, with a long slot in the centre), then the printer is compatible with all Amigas. All that is required is a suitable cable, available from most Commodore dealers.

b) After contacting Hitachi (☎ 081 849 2000), I was told that the Hitachi 1646 Colour TV has an Analogue RGB input. So it will work with all Amigas, although a lead will have to be constructed to match up the particular connections. **WR**

## SCREEN DEBUT



Over the past two years I have become very interested in home video and in

that time I have purchased a fair amount of video equipment, most of which is S-VHS compatible. I now wish to make my home productions to a more professional standard – but purely as a hobby which is of use to my family and close friends.

My problem is that I am not a computer buff. I have found your magazine invaluable in learning through lay terms more than I have comprehended from any other magazine in the marketplace – I now subscribe to *Amiga Shopper* – and I've decided that it would be nice to have an Amiga to assist with graphics, titling, and so on.

However, I find the whole matter rather confusing – when I go to the Amiga shop I am confident of the product I want to buy (probably an Amiga 1500 with 4Mb of RAM), but when I mention to the salesman that I want to interface it with video then the whole conversation seems to go downhill and usually ends up with "Go and see the video shop, they should be able to help".

When I arrive at the video shop I am informed that the Panasonic AVE-5 mixer that I am considering buying does not need a genlock. I then enquire as to what titling facilities can be used and find that the systems available are very basic, even though some cost nearly £200. After that it's downhill all the way.

Therefore could I enlist your opinion as to what equipment I need to make successful home videos, at a budget reflecting the standard of equipment I already have? I think I need an Amiga 1500 with 4Mb of RAM and a 40Mb hard disk, a multisync monitor, a genlock, a RockKey and a Panasonic AVE-5 video mixer. Software would likely be *Broadcast Titler 2* and *Deluxe Paint IV*. But what do you think?

I would be grateful if you could provide a diagram of how to connect

## JARGON BUSTING • JARGON BUSTING

**Assembly language** – is written as a series of short words known as 'mnemonics' – these are translated directly into numbers for direct processing by the computer's micro-processor.

**Emulator** – either hardware or software that enables programs written for another machine to be used on the Amiga. The emulator is transparent to the programs running under it.

**Genlock** – a way of slaving one video source (say, an Amiga) to another (video tape, for example) in order to synchronise their signals. This will allow stable wipes, mixes and other effects including overlay between the two sources.

**PC** – IBM PC-compatible computer based on one of the Intel 8067 or 80xxx series CPUs, and with similar hardware/software configuration.

**Printer driver** – a program that sits in-between any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.



all these various bits and pieces together because there are umpteen ways of plugging leads into my equipment and I'm not always sure if I am doing it correctly. Also, in the future I may well want to use my Amiga for word processing and similar business-type uses, so if there is anything else you think I need, please don't hesitate to let me know.

KG Brown  
Clare  
Suffolk

It's a difficult time to be advising folk what kind of Amiga equipment to be buying for video use. With the new Amigas available my inclination is to point you towards them because they offer much more for the graphics user, as well as more speed and stability. But the A4000 is likely to be outside your price range and the A1200 has to have a hard drive and extra memory added to really make it applicable to your needs. And then there is the real possibility of buying an Amiga 3000 at knock-down prices. Or picking up a well-equipped A2000 or 1500 second-hand. I told you it was difficult, didn't I?

Still, you asked for specific advice, and that's what we're here for. I suppose if I had to make the choice I'd probably have to choose the Amiga 1200, expand its memory by adding at least 4Mb RAM and install the largest hard drive I could afford. A good dealer should be able to advise you on this. Although you don't strictly need a multisync monitor, one of these will help to keep your eyeballs steady if you don't like the interlace jitters, though remember that you'll need to check your work on a video monitor as well – which won't be a problem as the A1200 has composite, RF and RGB video outputs.

Forget the chroma-keyer for now and concentrate on buying a good genlock, perhaps a GST Gold or Electronic Design YC genlock – and expect to pay at least £400. While chroma-keying is interesting, it's certainly not an essential piece of startup kit and, like the RocGen, cannot handle S-VHS.

To do your video mixing you'll still need a mixer, so the AVE-5 may well suit your purposes. Take its output to the genlock and you can overlay graphics and still do effects behind the Amiga images.

For graphics software there isn't yet a lot of choice, as titles are only just starting to appear which support the new graphics modes. I've heard that an AA chip version (for the new chip set in the A1200 and A4000) of *Broadcast Titler* is ready, but I have no more details. A revamped *Deluxe Paint* should also be available by the time you read this, as should

## JARGON BUSTING • JARGON BUSTING

**Compugraphic fonts** – rather than a simple bit-mapped image of each character, which grows more jagged with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied in printing, no information is lost and the result always looks smooth.

**Hard drive** – like a floppy drive, but much bigger and faster. Also, the disk cannot be removed, so once the hard drive has been filled, it's either time to delete excess files or get another one.

**PostScript** – A powerful mathematical language used to describe graphics and text images to compatible printers. Because it does not rely on a pixel system, objects so described can be scaled and rotated without distortion or loss of detail.

*Brilliance*, touted as being the new paint champion. But only time will tell, so the moral here is either to wait a while, or test before you buy. Don't forget to add *Scala* to your shopping list too, as it can add another dimension to your work. And get hold of some good typefaces too – a set of Agfa Compugraphic fonts can be very useful, as can some of the PD font sets.

I'm sorry I can't really advise you on how to connect everything together, since I have no idea what equipment you will be buying. But don't worry, it really isn't too difficult – most of the items can only be connected in one way.

For business use you'll likely require a printer, and (obviously) some business software. But as you don't mention your business aspirations I can't really take it any further. Rest assured, when you want the right stuff, you'll be able to find it – unless it involves chicken sexing, nuclear power or something really obscure. **GW**

### POSTSCRIPT POSER



Having wasted months trying to print a full A4 page from my B2000 to a HP

Laserjet III, I gave up and installed another 2Mb of memory and a Jetpage PostScript cartridge in the LaserJet. The B2000 and the printer now both have 3Mb.

Now, outputting as PostScript whenever possible from *Excellence! 3.0* and *Professional Page 2.1* has solved most of my problems.

Trying to make some money from DTP – leaflets, mailshots, manuals and so on – I bought *CGFonts Vol 1* from George Thompson Services to add some interesting fonts to *Professional Page*. When I include downloadable fonts in the PostScript output (having installed everything in the right place), the printer appears to process the data correctly but fails to produce any output, simply returning to its 'ready' status.

Outputting to a file shows that the correct 'fontname.psfont' file from the CGFonts:PS directory is included. Knowing that downloadable fonts are removed from printer memory after use by *Professional Page*, I sent the 'fontname.psfont' file to the printer using the CLI then used *Professional Page* without including downloadable fonts. I got the same result – nothing, that is.

George Thompson Services informs me that these fonts were tested by Jeff Walker, "the DTP guru man", and work correctly. It was suggested that I should upgrade the LaserJet to 4Mb. Surely this shouldn't be necessary just to produce a simple A4 page using only a single 'softfont'?

CPI, who make Jetpage, guarantee Adobe Type 1 and Type 3 (.psfont) softfont compatibility.

The disappearance of output also occurs if I send an EPS file (170K), produced by *Touch-Up 1.04*, to the Laserjet directly via the CLI or as part of a page from *Professional Page 2.1*.

BE Matthews  
Walsall  
W Mids

I certainly tested some of the Type 3 typefaces on the GTS disks, but not all of them. The ones I tested worked fine on a laser printer that contained a standard version of Adobe PostScript, as opposed to a third-party implementation. I've even used one or two in documents that have been printed on an Imagesetter.

Normally, if a particular typeface is not available to the PostScript printer, the text set in that typeface gets printed in a default typeface, normally Courier. When a PostScript printer doesn't print and returns to its 'ready' state, this is normally caused by PostScript crashing and resetting the printer – just like programs on the Amiga can crash and reset the computer. This is usually because PostScript has run out of memory.

But as you say, 3Mb is plenty for an A4 page and just one softfont, providing the softfont isn't massively and enormously complicated, which none of the Type 3 typefaces on the GTS disks are.

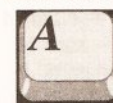
Try a little test. Create a tiny little PostScript page – say, business card size – make sure the 'PostScript Output Specs' in 'Alter Current Page' are set to the small size, and use the softfont to type a few words. Then output that to the PostScript printer, including downloadable fonts. If it prints OK, then it looks like there is a memory problem that another 1Mb may cure; if it doesn't print, then either the Jetpage PostScript cartridge is not completely Type 3 compatible, or the Type 3 typefaces on the GTS disks (which were created with the *FontManager* program that comes with *Professional Page 3.0*) are faulty.

If you had told me the exact typeface you are having trouble with, I could have tested it for you. But you didn't, so I can't. So I picked one of the typefaces from Vol 1 at random (UpperEastSide) and output that as PostScript to the *SaxonScript Professional* PostScript interpreter, and it worked perfectly. I'm pretty sure that the Type 3 data is OK.

So it's either not enough memory in the printer, or the Jetpage PostScript cartridge is not as compatible as it claims to be.

The EPSF output from those early versions of *Touch-Up* is not the full shilling, which is probably why the Save EPSF option is missing from later versions. We're up to version 3.02 now, by the way. **JW**

### TRANSPLANT SURGERY



I have an A500 Plus with a GVP Series 2 hard disk and various other bits and pieces.

While I think it is an excellent machine, there are one or two drawbacks. I do a lot of writing and I find the A500 keyboard particularly awful. I understand that there is a company that manufactures an adaptor that allows you to connect a PC keyboard to the Amiga.

Now I'd like to buy one of these but – to save space on my already crowded desk – it would be really useful if I could transplant my A500 into a PC box along with the hard drive, second disk drive and keyboard adaptor, then sit my monitor on top of the box.

As far as I'm aware, these boxes are pretty cheap – I remember reading a letter in *Amiga Shopper* from a reader who had already carried out the transplant operation that I described. Is there any chance of producing a DIY project within the magazine?



**Finally, is it likely that the new AGA chip set and Workbench 3.0 will be released for the A500?**

**William Hudders**  
**Roundhay**  
**Leeds**

A couple of interfaces are available for the Amiga that will enable you to connect and use a PC keyboard. Unfortunately, these are only available for the CDTV and any Amiga that has an external keyboard. Even if you were to successfully modify the A500 so that the interface could be used, there's not a great deal of point to the exercise.

I was forced to use a PC keyboard on my Amiga 2000 quite recently and I have to admit that it was not a pleasant experience. For a start, the Amiga relies heavily on those special Amiga 'A' keys which the standard PC keyboard layout doesn't offer. Although a PC keyboard is fine for straight text processing, try using it for any other form of keyboard entry and you'll find it sadly lacking.

The other alternative is to treat yourself to Checkmate Digital's keyboard conversion kit (it costs approximately £60) which moves the A500's existing keyboard out of the A500 box and into a steel keyboard enclosure. It's rather clunky, but it does work. As discussed in the second of this month's questions (see 'Keyboard Corner', page 25), I'm surprised that no one has yet come up with an interface which allows A500 users to connect and use an Amiga 2000 keyboard.

As for the case conversion, I see no reason why the A500's innards couldn't be transplanted into a PC case, but you may have to mess around with a lot of connector extensions to get the A500's connectors to fit into the holes provided in the PC casing. A DIY case conversion kit project wouldn't actually be a bad idea for a feature within the magazine - I'll certainly suggest it to our illustrious editor, Cliff (consider it suggested -Ed).

Although Commodore claims that it has approached several third-party vendors to encourage them to produce an upgrade that will allow 'standard' Amigas to use the new AGA chip set, I personally don't think that such an upgrade will see the light of day. The new chip set is based around 32-bit technology, so squeezing it into a 16-bit A500 isn't going to be easy (if at all possible). There's good news on the Workbench 3.0 front though - although Workbench 3.0 is written specifically for the new chip set, Commodore has just launched Workbench 2.1, a version of 3.0 that will happily work on standard Kickstart 2.04-based Amigas. **JH**

## BRANCH LIBRARY



**No matter what I do I cannot get Fountain to work. Every time I try to open the**

**program I get a message: "Cannot open diskfont library V37". I understand from some instructions it is necessary to change the LIBS: assignment, but I have tried this to no avail. Can you please explain in plain English what I should do?**

**EJ Storey**  
**Barking**  
**Essex**

This is quite a common problem and seems to stem from the fact that some copies of the Workbench 2 disks were sent out with the wrong version of **diskfont.library**. This is a collection of routines for handling fonts stored on disk (as opposed to the two in ROM). Two versions should be supplied with Workbench 2: version 36 on the Workbench disk and version 37 on the AmigaFonts2 disk. In either case these files are stored in a drawer marked LIBS.

To check which one you have you need to open a Shell and place Workbench 2 in your internal drive and AmigaFonts2 in the external drive. Now enter the following commands (Shell's output is also shown - you only enter the line after the '1>' prompt):

```
1>VERSION LIBS:diskfont.library FILE
Workbench2:Libs/diskfont.library 36.1
```

```
1>VERSION DF1:LIBS/diskfont.library FILE
AmigaFonts2:Libs/diskfont.library 37.58
```

(Don't try typing in the '.' symbol - it's just there to show you where commands go over the end of a line). The output from your machine may look slightly different, but the part we are interested in here is the number.

This is split into two parts: the version number and revision number. Let's say it reads 37.58 (as it does in our example). This means version 37 and revision 58. The version number is the important part and that must be 37 or higher for **Fountain** to work. If the **diskfont.library** is version 37 on your AmigaFonts2 disk, you are part way there already: if not, you'll have to find a friend (or dealer) who has one.

When you get hold of the right disk, pop it in the external drive, put Workbench in the internal drive, open a Shell and enter this:

```
COPY DF1:Libs/disk#? LIBS:
```

and **Fountain** will suddenly start to work like magic. **MS**

## SYMBOLIC LOGIC



**I am doing an Open University maths based course and I want to use my**

**Amiga and Panasonic KXP-1124 printer to write out tutor-marked assignments.**

**However I need to use special mathematical symbols, which are not included in the standard fonts. I use TransWrite predominantly, but realise that I may need to get another word processor.**

**Keith Irving**  
**Lyneham**  
**Wiltshire**

It sounds like **Wordworth 2** will be right up your street - it comes with no less than four mathematical symbol Compugraphic (outline) typefaces. **JW**

## MISLEADING INFO?



**I recently purchased a GVP A530, with an 80Mb Hard Disk. I am very pleased with**

**it, but have a few questions:**

**a) SysInfo tells me that the boot priority of my Hard Disk is -10. Is**

**there any way of changing this to shorten the startup delay?**

**b) SysInfo also informs me that the MMU in the 68030 is not active. Do I have an MMU?**

**c) I would like to upgrade to 1Mb of Chip RAM. SysInfo (again!) tells me that I have an ECS Pal Agnus. My computer is fitted with an original Commodore A501 RAM expansion. How should I upgrade?**

**d) Is there any way of installing F-19 Stealth Fighter on my hard disk? When I insert Disk A in df0: WorkBench tells me its structure is corrupt and to use DiskDoctor to correct it.**

**I'd also like to congratulate GVP on how easy it was to install my A530 - it really is simplicity itself!**

**Richard Munro**  
**Charterhouse**  
**Survey**

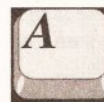
a) 'Boot Priority' has nothing to do with the length of time the boot takes. This is the order in which the Kickstart will check drives before booting off them. You will also observe that df0: has a higher priority than your hard disk - this is why if you reset with a floppy in the drive then it will run the floppy rather than the hard disk. The startup delays depend on the drive setup time - some drives need a lot of time to accelerate to speed and perform various tests.

b) No, you do not have an MMU. The MMU is a Memory Management Unit, and is very useful for programmers as a debugging tool.

c) In theory it should be very easy to upgrade to 1Mb of chip RAM, but without knowing your A500's board revision I can't tell you just how easy this would be! Speak to your local dealer or one of the advertisers in *Amiga Shopper* - they should be able to help you out.

d) No, I'm afraid. It is a non-standard disk format, and this sort of format will not install onto a hard disk. More and more modern games are able to install on hard disks now, so watch out for them. **TS**

## MIX AND MATCH



**I have a GVP Impact II 52Mb hard drive. Can I add a 1Mb x 8 SIMM chip in the**

**drive to give me an extra megabyte of fast memory? Also, will this memory help speed up Wordworth as it sometimes becomes slow and I can type faster than it? Plus, would I need a monitor to see the Wordworth text clearly (some fonts are unreadable on my TV)? What is disk fragmentation, and does it slow down disk access?**

**In Deluxe Paint III, can I draw a background picture then add another IFF picture into that from**

## WIDEN YOUR REPERTOIRE



**I'm using Sequencer One for most of my MIDI requirements but I would like to have some software which will allow me to store a dump of the sounds from my Roland D10 (via SysEx Messages) and of course put them back so that I can have a larger bank of sounds to play with. I'd also like a sound editor program. Do you know of anything which may help?**

**Rob Darke, Whitecross, Hereford**

Since you need both a patch librarian and a patch editor one solution would be to opt for Dr T's **XOR**. It's expensive but since it is a generic editor librarian package that supports, and will continue to support, all major synths and synth modules, it may turn out to be the most viable option in the long run.

Another possibility is to use separate packages. For example, you could use something like the **Bars & Pipes** 'PatchMeister' as the librarian and a dedicated patch editor program (Dr T markets a series of patch editors including ones for the D-10). **PAO**



**Powerscan? If I draw a background I load Powerscan IFF which erases the current background. Do I have to use the brushes or something?**

**Finally, can the Canon BJ-10ex be upgraded to colour?**

**Hassan Ali  
Mile End  
London**

You can use your 1Mb x 8 SIMM in your GVP hard disk, but you will need to add two – one on its own will not work. Buy a second 1Mb x 8 SIMM – it should cost less than £30. Make sure it is the same speed as the SIMM you already have – read out the number on the chip to your supplier and they will be able to find a matching SIMM for you.

Adding this Fast RAM will make Wordworth run faster, anything up to 30% faster than normal. Doing any serious Amiga work on a television set can be painful, so I would definitely suggest getting a monitor if finances allow.

Disk fragmentation on hard disks is where files are split up on the hard disk and stored as small pieces, rather than being stored together in one large lump. This usually happens when the disk is nearly full and there is not enough room to store each file in one large piece on the disk. It slows down file access because the hard drive heads have to move around the disk a lot to load each piece of the file. To get rid of fragmentation back up your hard disk, and reformat using the AmigaDOS command:

```
sys:system/format drive dh0:~
name HardDisk noicons quick
```

You do not need to use your hard disk setup disk. Next, restore your backup. As the backup is restored each file is written back in one piece, and this gets rid of fragmentation. There are public domain utilities that claim to eliminate hard disk fragmentation, but personally I'd never trust any public domain utility with my hard drive data!

There are several ways to add a picture onto a background in *Deluxe Paint III*. Possibly the easiest is to draw your background and then load the other picture as a brush.

The Canon BJ-10ex is a bubblejet, which uses ink cartridges. Coloured cartridges are available, but only one can be used at a time. **JR**

## MAKE THAT CALL



**I have several questions about the 'public domain', which I hope you can answer for me.**

**a) I have read your pages about public domain software, and understand that it is possible to**

**download programs from a bulletin board. How exactly do I do this?**

**b) Can you suggest any bulletin boards and their phone numbers?**

**c) Do you have to leave some programs of your own on the bulletin board, and how do you go about doing this?**

**d) How would I go about setting up a public domain library, as I've heard that anyone can do this?**

**e) Is my ICL 2426D modem suitable for this purpose?**

**f) Is it possible to print pictures of parts of games and, if so, how?**

**Ian Buckley  
Stockport  
Cheshire**

a) To download PD programs from a bulletin board you need a 'modem'. This is a device that plugs into your telephone socket and the serial port on your Amiga. You also need some suitable software. I use *NComm* which is an excellent shareware package. This means that if you like it then you send an appropriate sum to the author.

You also need, depending upon your age and disposition, the permission of the owner of the phone, as bills somehow tend to escalate when you get into computer communications (or 'comms' as it is usually known). Phoning a board is as easy as entering the required digits into a requester box.

b) Here is a list of some popular UK bulletin boards and their telephone numbers:

<b>01 for Amiga</b>	<b>071 377 1358</b>
<b>Meridian BBS</b>	<b>0273 588924</b>
<b>Ponty BBS</b>	<b>0443 409882</b>
<b>Amiga Forgery</b>	<b>0908 604229</b>
<b>Guru 10</b>	<b>0738 52063</b>
<b>Yukon Ho!</b>	<b>0232 768163</b>
<b>Saxon</b>	<b>0273 308800</b>
<b>Chiba City</b>	<b>0501 44262</b>
<b>Protocol BBS</b>	<b>0403 272931</b>
<b>Theatre West End</b>	<b>0625 828795</b>

c) No, but you can if you wish. However, the temptation to stick any old rubbish onto the board is rather

high, so use considerable restraint, and remember, the copyright laws apply to bulletin boards just as much as they do elsewhere.

d) Public domain software is freely available to anyone, and can be readily copied. To start your own library, all you need is loads of PD programs and the time to organise yourself. However, there are cautions and pitfalls. Advertising costs a lot of money, and you may not sell any of the programmes at a profit – you may only request a fee for postage, disks, handling and so on. Many PD houses began by advertising in the small adverts in the pages of *Amiga Shopper*, and developed from there. I wish you luck, but don't expect to become rich from it.

e) Your ICL 2426D will work fine.

f) Your last question is unrelated to the others, but there are a few ways to do what you ask. The first and most important point is whether the game you want to grab an image from is multitasking. To find this out, perform this simple test: can you pull down the screen to reveal the Workbench screen?

If you can do this, then the task is fairly simple – all you need is a simple screen grabber such as *Screen X*. This is a PD package which does the job of screen grabbing very well. The program loads itself into RAM and, while resident, will enable you to grab any current image in your game. This can be saved to RAM as an IFF file, and then printed out via *DPaint*, or any other suitable package. Another package which performs the same task is *Grabbit*, but this is not PD.

If the software does not multitask, which I'm afraid is usually the case, then the problem is much greater. Working as a journalist, I constantly need this facility, and along with most of my colleagues, I use Datel's Action Replay cartridge. This will grab a screen from anything thrown at it. One small point, however, is that it does not always include any sprites which may be in the image. **WR**

## JARGON BUSTING • JARGON BUSTING

**Digitiser** – a device which takes the analogue information from a source such as a video camera and converts it to digital screen information for use by a computer.

**IFF** – Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way. It allows data to be exchanged between programs very easily.

**Modem** – a device which connects to the Amiga's serial port and converts computer signals into a suitable format for transmission along a phone line. Likewise, it will convert incoming signals back into a form the computer can recognise. External modems will work with any micro computer, although it is possible to buy Amiga-specific cards to plug into the A1500, A2000, A3000 and A4000, thus keeping the serial port free for something else.

## REACH FOR THE STARS



**I have just bought a Star SJ-48 printer. Does Star make a specific driver for it,**

**and which setting from Preferences (1.3) would give the best results? Is it possible to upgrade it to colour? Which printer driver should I select from IntroCAD?**

**Colin Paine  
Bognor Regis  
W Sussex**

Star recommends a driver called Star24Plus, which should be available from your Star dealer. If not, phone Star and ask; the number's in your manual.

Density 7 and Grey Scale 1 is the best graphics resolution (360 by 360 dpi), and these are really the only things in Printer Prefs you need to touch. For *IntroCAD* select an Epson 24-pin compatible driver.

Finally, no it's not possible to upgrade the SJ-48 to colour. **JW**

## THREE INTO TWO



**I have two Amigas – an old 1.3 A500 with 1Mb Chip and 1Mb RAM and a new**

**A1200 with 2Mb Chip RAM and a 60Mb internal hard drive. I have three questions to ask:**

**a) I have obtained an Olympus VX-303 camera to use with my Vidi-Amiga 12. The camera normally connects to a video recorder using a 10-way plug. Could you tell me which pin is for the video output and its earth, as well as the 12V pin?**

**b) Is the HAME mode on the Vidi-Amiga 12 compatible with any mode on the new A1200?**

**c) If I bought a modem from America would it be compatible with our phone connectors or would I have to fit a new connector?**

**Chris Mallard  
Chessington  
Surrey**

a) The folks at Olympus tell me that this camera was discontinued about six years ago, but that it cost over £2000 when new and had a good lens system, so if it is in good condition you should be OK. However, they couldn't directly lay their hands on the pin information you require, as the service manuals weren't at hand. But they would like to help and suggest that you write, giving details of your problem, to Robert Smith at Olympus, 28 Honduras Street, London EC1Y 0TX (☎ 071 541 4440) and he will do his best to sort it out.

b) Not as far as I know, but there is EREG mode which is for using 256 colours with the AGA chips.

continued on page 37





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Amiga Format July 1992

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Amiga Computing Feb1992

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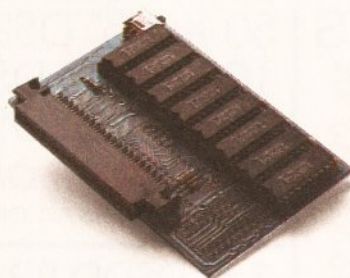
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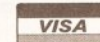
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continued from page 32

c) In all likelihood you would have to supply a connector yourself, but you could always check first. Even some modems bought in the UK need new connectors – such as the SupraFaxModem. You may also need a power transformer for your planned buy. Unless you're there in person, you may be better off buying from a UK supplier, since at least it will be easier to sort out any problems should anything go wrong. **GW**

## OPEN WITH CARE



I recently invested in a GVP 52Mb hard disk for my Amiga and was impressed

by the remarkable increase in speed it afforded when loading programs such as *DPaint*, *Wordworth* and *Maxiplan*. However, although loading the *Maxiplan* application takes very little time, saving and loading worksheets is not noticeably faster than using a floppy disk. Why?

Renato Mozzachiodi  
Burnside  
Glasgow

Ah, the 65 million dollar question. The time taken to transfer information from a mass storage medium to memory is directly related to the speed of the transfer hardware. So, since the hardware controlling a hard disk is considerably faster than that of a floppy disk, the data gets into memory faster. However, the speed at which an application processes the data is controlled by software.

If the software can process data faster the storage media can retrieve it, you will notice an increase in speed when you accelerate the mass storage media. Typically this applies to applications which merely buffer the majority of information in RAM

while loading and process it later: word processors for instance.

Conversely, if the application processes the data while it is being received, the transfer speed is affected by the speed of the software – and this is the case with *Maxiplan*. If you were to accelerate your Amiga by 300-400%, you would notice the improvement as *Maxiplan* should then be able to process the data faster than it can be retrieved from hard disk. And the same is true for saving data too. **MS**

## ONE-OCTAVE OCTAMED?



I have *OctaMED 4* but my samples, obtained from cover disk and PD sources,

cover a very limited note range – one octave above middle C. Is there any way to extend these?

D Cussell  
Margate  
Kent

You seem to feel that you are limited to a fixed single octave range when using 1-octave IFF samples with *OctaMED* – this is not true. Are you, for example, aware that there are *OctaMED* gadgets which can change the note range of all, including 1-octave, samples? Ranges can be further extended by obtaining, or by creating yourself, either 3-octave or 5-octave IFF samples. Editors like *Audiomaster* will, for example, let you read in a 1-octave sample and re-store it as a 3- or 5-octave IFF file. **PAO**

## SLIPPED DISKS



When *Workbench* is loaded up in my internal drive and Extras is inserted

into the external drive on my 1.3-based A500, the *Workbench* doesn't always recognise the disk and simply displays a disk icon

## CD-ROM NEEDS CD-RAM



Having owned two Amigas in the past 18 months the CDTV seemed the ideal upgrade so I went for it. The problem is I can't find a stockist anywhere who sells extra memory which doesn't invalidate your warranty. I have also tried everywhere for a wired mouse or joystick that plugs into the CDTV. Are there any available, and where from?

J Murphy-Callaghan, Longton, Staffs

The only way to add extra Fast memory to the CDTV is by internal expansions which fit into the Agnus or 68000 chip sockets. Because there is no official way to expand memory, if your CDTV goes wrong for some unconnected reason then repair companies may turn a blind eye to the broken warranty sticker, but if you blow up your CDTV while fitting the RAM expansions it's your own fault. Get the RAM fitted by a reputable supplier, ask them for a signed statement that they fitted it, and you shouldn't have any problems with your warranty.

The Brickette will be available shortly (hopefully by the time you read this), and allows a mouse and joystick to be connected to the CDTV. **JR**

## JARGON BUSTING • JARGON BUSTING

**CD-ROM** – Compact Disc Read Only Memory is the latest technology in storage devices. A CD can hold over 600Mb of data, compared to around 100Mb for a hard disk and 880K for a floppy disk. The big disadvantage is that users cannot store information on a CD, only retrieve it, but this doesn't stop CD from being a potentially revolutionary medium.

**Kickstart** – the most basic and central part of the Amiga's operating system. These days it is held in ROM, so that it is immediately present when the machine is switched on.

**ROM** – Read Only Memory is used to store essential programs, such as Kickstart and many of the library routines. These do not have to be re-loaded each time the Amiga is switched on because ROM retains its contents without power.

**ROM sharer** – a device which will hold more than one ROM (the chip in which Kickstart is stored) and enable the user to choose which version to use.

**Sample** – a digital representation of a sound. A sample can be sent through a digital to analogue converter and be heard as sound. Changing the sample's playback speed changes the pitch of the sound.

labelled 'DF1:BAD'. If these disks are then copied and they are used in place of the originals, all is fine. Also, if I then put the offending disks into the internal drive, they are recognised instantly. What's going wrong?

Simon Edgley  
Luton  
Beds

It sounds to me like your external drive is in need of a well-earned service. The troubles you mention could be caused by any one of several problems ranging from dirty heads to head alignment. My advice to you would be to take the drive along to your nearest service centre and ask them to sort it out. Although it is theoretically possible to realign and even clean the heads yourself, I wouldn't advise it. **JH**

## SHARE YOUR 1200



For the past two years I have used an A500 with a 0.5Mb expansion for DTP,

word processing and some games. I am now considering upgrading to an A1200 but have a few queries:

a) Is it possible to fit a ROM sharer to the A1200 that will take all three versions of Kickstart: 1.3, 2.04 and 3.0?

If so, where can I get hold of one and will it solve many incompatibility problems?

b) Is it better to add 2Mb of 32-bit or 16-bit memory, and what is the difference?

c) Would it be worth having a 68881 or 68882 FPU fitted?

d) Would the A670 CD-ROM drive, or any other A600 peripherals work on the A1200?

Mr SJ Moran  
Edith Weston  
Oakham

a) No – you can't do it. Kickstart 2.04 and Kickstart 1.3 will not work with the AGA chip set which means you would run into serious problems if you tried something like this. In addition, there is no space inside the A1200 that would allow such a monstrosity to be fitted, and more importantly, the ROMs in the A1200 are 32-bit, and there are two of them. Conventional 16-bit ROMs won't fit – you'd have to fit A3000 ROMs, and these would fail with the AGA chips.

b) You can only add 16-bit memory through the PCMCIA port on the A1200. 32-bit memory is always recommended, as it is approximately twice as fast. This is because the computer can operate on four bytes of memory at once as opposed to only two in 16-bit systems.

c) It depends on what you are doing. The FPU speeds up floating point operations. DTP programs will benefit, as will art work, design, and CAD applications – such as *Real 3D*, *VistaPro* and so forth.

d) No-one knows yet. Anything that connects to the PCMCIA port on the A600 will work fine on the A1200, and vice-versa, as PCMCIA is an industry standard. **TS**

## A REAL WASHOUT?



On purchasing 10 diskettes from a mail order company, I also received a 'disk head

cleaner' free. The manufacturer recommended that it is used at least once a day.

Do you agree, or is it advisable not to use this at all? The type they sent me is the sort that uses a fluid in conjunction with a special disk with a felt-type insert.

A Gill  
Beighton  
Sheffield



Now, not everyone will agree with me on this one, but my advice is to keep this sort of thing as a very last resort. I have over 50 assorted drives in my IT suite at work, and in six years I have never cleaned one of them. They are used continuously throughout the day, and continue to function OK, despite general abuse, regular knocks and occasional spillages of coffee. **WR**

## PRINT ON A BUDGET



I have a Canon BJ-10ex printer, *Deluxe Paint III* and *Wordworth 1.1*.

I want to produce a printout that contains high quality text and music-related clip art.

As money is tight, can you suggest any PD or shareware disks? Proportional, outline (scalable) typefaces and images would be nice, though not essential.

**FD O'Brien**  
Merseyside

The versions of *Wordworth* and *Deluxe Paint* you are using do not work with Compugraphic outline typefaces, and neither works with scalable images, or structured drawings in other words. Both utilise low resolution (75 dpi) bitmap graphics and bitmap fonts.

*Wordworth 2* and *Deluxe Paint 4.1* support Compugraphic typefaces, but if you want to use structured drawings you'll need something like *PageStream*, *Professional Page* or *Professional Draw*, all of which support scalable typefaces and graphics.

There's no PD or shareware solution from the program point of view, but there are stacks of libraries and small graphics companies peddling scalable typefaces and clip art. Check out the adverts! **JW**

## FLICKERING GENLOCK



My main interest is using *Deluxe Paint IV*, particularly for animation. My

problem is that I have recently purchased a RocGen Plus genlock to use with my Amiga 500 Plus. The genlock produces a very noticeable flicker and also a colour shift. I might learn to live with the latter, but not the former. I'm using lo-res mode, by the way.

People who know more than I do (which isn't difficult, as I passed my 'sell-by' date some years ago) tell me that this is par for the course. Do you agree? If so, can you suggest another genlock which will give more acceptable results? If not, is there anything which I can do to improve the present setup?

**Mr B Haslam**  
Drumburgh  
Nr Carlisle

The colour shift doesn't sound exactly right, but the flicker isn't necessarily the genlock's fault. Flickering is an inherent part of the Amiga's output, though it's usually not something which affects video unless very thin, high contrast, horizontal lines are included in the graphics. I'd also advise you to work in Interlace mode, if you can, as this can help as well.

As for the colour smearing, I presume you mean a horizontal shift which results in a furry edge on vertical edges, particularly on bright reds and full blues. Part of the problem is that video equipment (especially at this level) doesn't like strong colours. The obvious cure is to tone any really bright hues down slightly and learn to live with it. If this doesn't solve the problem complain to the supplier of the genlock, as it may not be correctly set up. When I

reviewed the RocGen Plus last year I managed to improve its output by fiddling around inside it (though I don't recommend you do this), so maybe you have a duff one. **GW**

## SPEEDY CONCERNS



a) If I buy GVP's A530 processor accelerator/hard drive combination,

can I still use the hard drive when the accelerator is disabled using the 68000 fall back mode?

b) Will the GVP 68030

accelerator speed up DTP programs such as *PageStream* or will they simply run at the same speed as they do on a 68000-based machine?

c) Does the Amiga 3000 have a 68000 fall back mode? Does it also have a built-in flicker fixer?

d) Is there a package available for the Amiga that will allow me to create my own outline fonts in Compugraphic format?

e) Can I use fonts from other DTP programs within *PageStream*? And can I use *PageStream* fonts in other DTP programs?

f) When I try to print a page from *PageStream* at 360 dpi, I get an 'out of memory' message. What type of RAM (Fast or Chip) do I need to solve this problem?

g) How do I install other printer drivers into *PageStream*?

h) Are high density disk drives (1.76Mb) capable of reading standard 880K Amiga floppies?

i) I know that the Amiga can handle up to four drives. Is the hard drive counted as one of these four?

j) When you partition a hard drive, are the partitions treated as separate drives or as an extension to DH0:?

**Theofilos Gints**  
Macedonia  
Greece

a) Although the processor accelerator and hard drive controller are on the same card, they are still effectively separate. So, you can continue to use the hard drive even when running in 68000 mode.

b) It certainly will. Running a DTP program on an accelerated Amiga will give you faster screen redraws, faster processing of text and graphics – faster everything in fact. A processor card is particularly useful if you own a DTP program that uses outline fonts.

c) The Amiga 3000 does not have a 68000 fall back mode but it does have a flicker fixer built in as standard (it's called the 'Display Enhancer'). Note that you'll need a multisync or VGA monitor to take advantage of this.

d) Unfortunately, there aren't any font editing programs available for the Amiga that can produce

Compugraphic outline fonts. But I'm sure it's only a matter of time before someone comes up with the goods. Take my advice – keep an eye on Gold Disk...

e) The only type of outline fonts that can be used with both *ProPage* and *PageStream* are Adobe Type 1 fonts. Even then, *ProPage* cannot handle these fonts unless they have first been converted to Compugraphic format using Gold Disk's *Font Manager* program.

f) Any RAM expansion will solve your printing problems, provided that it is big enough. My guess would be that you need at least an extra 2Mb.

g) The printer drivers used by *PageStream* aren't the same as the printer drivers used by the Amiga Workbench. *PageStream* uses its own custom printer drivers which are specifically written to work with the program. If you have managed to obtain these, just copy them into *PageStream*'s 'Printers' drawer and then select 'Setup Printer' from within the program.

h) In general, yes.

i) This maximum of four drives does not include hard drives.

j) As far as AmigaDOS is concerned, each partition on a hard drive is totally separate and therefore has its own device name (DH0:, DH1:, DH2: and so on). **JH**

## IT'S ALL ON TAPE



At present I back up my hard disk using *Quarterback V5*.

However, this takes over 20 disks and an awfully long time. I am thinking of buying a tape streamer and have seen some advertised in PC magazines for around £150-£200. Could I purchase one of these and connect it into the SCSI port on my hard drive? Would I need a controller of any sort? The tape streamers I have seen are: Wangtek 3040F/P and Colorado Jumbo DJ10. If neither of these are suitable, could you recommend one?

**Robin Davey**  
Billericay  
Essex

Most Amiga SCSI controllers can support tape streamers (your GVP controller certainly can) but you will require a SCSI one. Most cheap PC models either have a dedicated (non-SCSI) controller card or connect to the floppy disk controller. Neither type will work with your Amiga. You will need a true SCSI tape streamer, and these are not cheap. A 250Mb SCSI model will cost between £350 and £500, rising to over £1500 for a 8Gb SCSI DAT device.

Once you've got your tape streamer, *Quarterback 5* will support the tape drive directly. **JR**

## JARGON BUSTING • JARGON BUSTING

**Chip RAM** – the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally a maximum of 512K, newer machines fitted with the fatter Agnus graphics chip can access 1Mb, enabling smoother animations and more screens to be displayed at once. The new A1200 comes with an Agnus chip capable of addressing 2Mb of Chip RAM.

**Flicker fixer** – a device that removes the flicker from the Amiga's interlace mode and the visible scan lines in the non-interlace mode. Interlace mode is the Amiga's way of doubling the vertical screen resolution, but normally by effectively halving the screen update rate and creating a noticeable flicker.

**Genlock** – a way of slaving one video source to another in order to synchronise their signals. This will allow stable wipes, mixes and other effects including overlay between the two sources.

**Partition** – part of a hard drive separated off from the rest. As far as Workbench, AmigaDOS and the rest of the world is concerned, a partition is a disk in its own right. Speed problems do come to the fore when you try to copy data between two partitions on the same drive.



**Program:** BlitSize      **Language:** C  
**Purpose:** To generate programmer information for the Blitter  
**Author:** D Harris, Swanage, Dorset

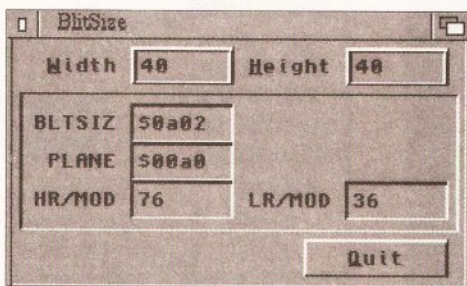
# CODE CLINIC

This month, for the first time, we are dealing with a C program. The program is called **BlitSize** and is a small utility written by an assembly language programmer to display blitter information on the screen. As an aside, this is a very good example of the "right language for the right job". The programmer is obviously writing programs that make heavy use of the blitter – probably games, which are written in 68000 assembly language for speed. This simple utility, however, was quicker to write in C, and by doing so, the programmer saved himself a fair amount of time and effort.

The blitter requires a fair amount of 'magic numbers' to operate, and one of these is the 'blit size'. This value is generated from the width and height of the object to be placed onto the screen, and is the cause of large piles of paper on programmers' desks. D Harris' program attempts to automate all of this using just one window-based application, thus reducing the chance of human error.

The program (shown working in the picture) actually works fine, apart from one small visual fault. Once the X and Y values had been typed into the two string gadgets, then the correct blitter size and other

information would be generated. If the user then moved a window over the blit size window and away again, two of the values would be horribly corrupted with strange characters. The program, however, never crashed, nor did it cause any of Commodore's debugging tools, such as *Enforcer*, to complain.



**BlitSize provides all the information you'd like to know about the Blitter**

## INSTANT DIAGNOSIS

The cause of this was quite simple, and an easy mistake to make in C. The program has two string variables, **size\_string** and **plane\_string**, which store the values that will be printed in the appropriate boxes on the screen. These variables were declared inside the function which printed them. After the values had been printed, the function returned to the main loop.

## JARGON BUSTING • JARGON BUSTING

**Enforcer** – An essential tool for all serious developers, with one small catch: you need an MMU (Memory Management Unit) to use it. MMUs are standard in the 68030 and 68040 (though not the cheaper 68030EC), and are optional on the 68020. *Enforcer* traps and shows you any illegal memory operations that you may make. In C this is very useful, as one of the most common faults is referring to an incorrect pointer variable.

**Blitter** – An Amiga chip which copies areas of memory from one place to another very quickly. It has other functions too, such as drawing lines, but its primary use is moving graphics data to and from the screen.

**User Interface** – The part of a program seen and operated by the user. This includes the buttons, menus and windows of a program. If the user interface is difficult to use, then the user gets a negative first impression of what could be a very powerful and well-written program.

Unfortunately, this meant that the memory in which the two strings were stored became free, and was rapidly overwritten by other functions in the program. This was fine, until the Workbench wanted to refresh the window after it had been covered by another window. It then looked at these two memory locations and printed what it found there, now meaningless data, on the screen.

The solution is just as simple: all you need to do is move the two variable declarations for **size\_string** and **plane\_string** to outside the function which prints them. This makes them global declarations rather than local ones. The memory for them now does not become free until the program itself is closed.

The working routine is shown in the listing immediately below. It is not the complete program source code – at around 80K, that would be too large to print here.

## GHOST WRITING

The original program was interesting from one particular point of view. It's the first I have seen (other than my own programs), that uses the Commodore application *ToolMaker* to develop the user interface. Around 80% of the full application was not written by the author at all, but was in fact generated for him by *ToolMaker*. Using this handy program the author was first able to design the layout for the buttons and window for his interface. *ToolMaker* then wrote an entire program for him that opened the window, created the buttons, and then quitted. All that then needed to be written was a small amount of extra code, about 90% of which is in the routine below. Neat eh? I guess that the program took around 30 minutes to write from start to finish, including the creation of the buttons and windows.

If you're interested in finding out more about these wonderful time-saving programs, contact Commodore at the address given on page 85 of this issue. **TS AS**

## BLITSIZE LISTING: THE SOURCE CODE

```
char size_string[128];
char plane_string[128];

BOOL Window_BLITSIZE_GADGETUP(struct TMDData *TMDData, struct
IntuiMessage *imgsg)
{
    switch(((struct Gadget *)imgsg->IAddress)->GadgetID)
    {
        case ID_QUIT:      /* Quit */
            return TRUE;
            break;

        case ID_WIDTH:     /* Width */
            x_width = ((struct StringInfo *)gadget_WIDTH-
>SpecialInfo)->LongInt;
            x_width = x_width/16;
            ActivateGadget(gadget_HEIGHT, window_BLITSIZE, NULL);
            break;

        case ID_HEIGHT:    /* Height */
            y_height = ((struct StringInfo *)gadget_HEIGHT-
>SpecialInfo)->LongInt;
```

```
        lo_mod = 40 - (x_width*2);
        hi_mod = 80 - (x_width*2);
        planesize = (x_width*2)*y_height;
        blitsize = ((y_height & 0x3ff)*64) + (x_width & 0x3f);

        /* Display the new information */
        GT_SetGadgetAttrs(gadget_LRMOD, window_BLITSIZE, NULL,
            GTNM_Number, lo_mod, TAG_DONE);
        GT_SetGadgetAttrs(gadget_HRMOD, window_BLITSIZE, NULL,
            GTNM_Number, hi_mod, TAG_DONE);
        sprintf(plane_string, "%04x", planesize);
        sprintf(size_string, "%04x", blitsize);
        GT_SetGadgetAttrs(gadget_PLANE, window_BLITSIZE, NULL,
            GTTX_Text, plane_string, TAG_DONE);
        GT_SetGadgetAttrs(gadget_BLTSIZE, window_BLITSIZE, NULL,
            GTTX_Text, size_string, TAG_DONE);

        ActivateGadget(gadget_WIDTH, window_BLITSIZE, NULL);
        break;
    }
    return(FALSE);
}
```



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**D**espite program names and advertisement claims, there's never been a truly professional structured drawing program for the Amiga, or 'illustrator' as the genre has become known. By 'truly professional', I mean something that a Macintosh artist would look at and exclaim, "I wish they did that for the Mac!"

The first attempt was *Aegis Draw*, which never really made it in this country, although it was popular in the States and is still widely used in Europe, though mainly for computer aided design rather than for desktop publishing.

The package that most UK illustrators use on the Amiga is *Pro Draw*,

usable on a unaccelerated machine. *Expert Draw* is to structured drawing what *PageSetter 3* is to DTP – an inexpensive, easy-to-learn introduction to the subject.

I don't think there are many professionals who would argue with me saying that the industry standard structured drawing package is *Adobe Illustrator* on the Macintosh. Because of this, the format in which *Adobe Illustrator* files are saved – a variation of PostScript – has also become a standard, probably as popular a standard as Encapsulated PostScript (EPS) format.

A professional Amiga structured drawing package needs to support *Adobe Illustrator* and/or EPS file formats for two reasons: first, so that files are portable across machines and packages; second, because there is a wealth of clip art available in those formats, thus opening the door to part-time artists who know enough to be able to alter someone else's work to create a 'new' drawing, but are not yet quite skilled enough to draw something from scratch.

*Pro Draw*, which employs its own 'clip' format for drawings, will import and export EPS, but will not display or allow you to edit the drawings, and can only print them to PostScript devices. *ProVector* by default uses the Amiga standard IFF-DR2D drawing format, but its PostScript module will import and export EPS images, display them and let you edit them freely. But it does not directly support PostScript Type 1 typefaces, nor *Adobe Illustrator* format.

So, there is a little hole in the market. Or rather, there was.

### FILER FACTS

An illustrator is a natural partner to a desktop publishing program, so it was an obvious progression for Soft-Logik, the *PageStream* people, to develop *Art Expression*.

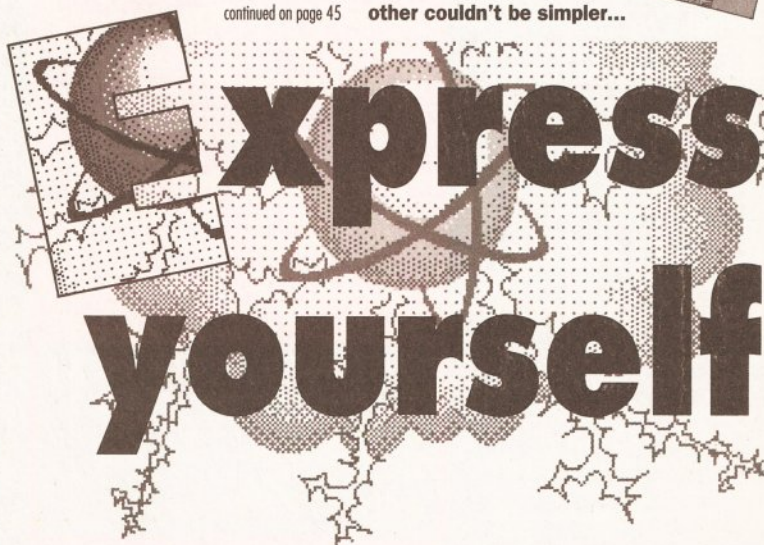
*PageStream* has been able to import EPS and *Adobe Illustrator* file formats for some time, but although you are able to edit *Adobe Illustrator* drawings that have been imported into *PageStream*, on-screen colour handling is not good and there is no way to save them except as *PageStream* documents.

The portability of the files *Art Expression* exports may be the major factor when deciding to buy it or not. The files it creates have to be compatible with other DTP software you are using – on the Amiga certainly, and possibly on a PC or a Mac as well.

By default *Art Expression* saves documents in Encapsulated PostScript format. These can be imported into any package that supports EPS, on any computer. As a test I ran some complex *Art Expression* documents through the *SaxonScript Professional* PostScript interpreter, and they printed fine. *PageStream* imported and printed

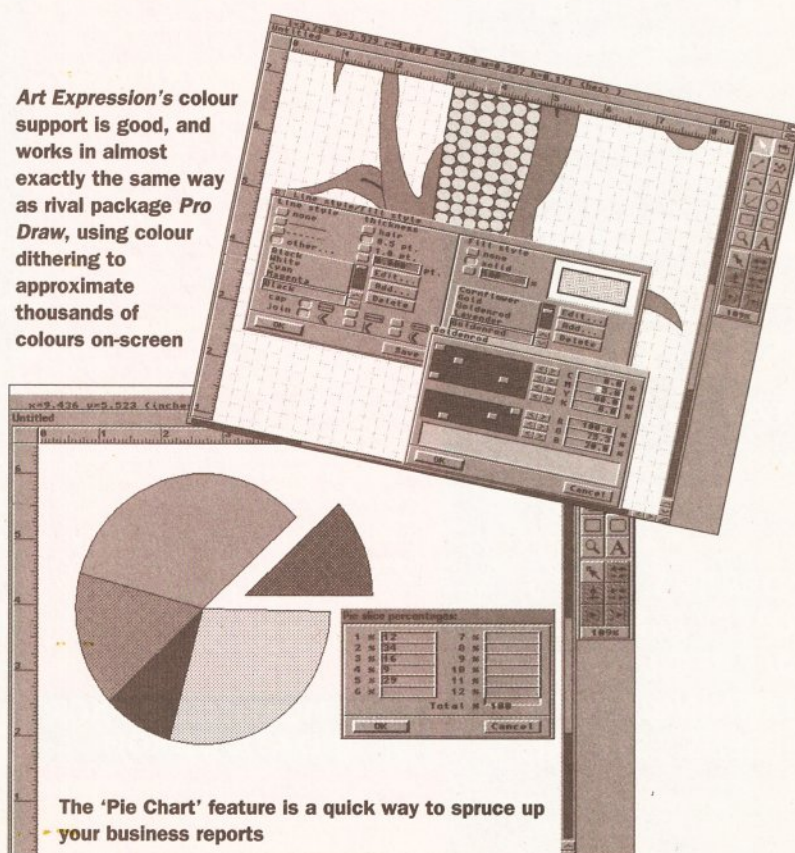
Aligning objects with each other couldn't be simpler...

continued on page 45



**From the people who brought you *PageStream* comes *Art Expression* – a top-flight professional illustrator program. Jeff Walker draws his own conclusions**

*Art Expression's* colour support is good, and works in almost exactly the same way as rival package *Pro Draw*, using colour dithering to approximate thousands of colours on-screen



***Art Expression* enables you to define both the size of the page and the size of your work area, enabling you to have a sizeable 'artboard' to which you can temporarily 'pin' drawings until you want them**

simply because it is the most widely available. The latest version (3.0) is very powerful considering its inexpensive price tag, but it will only run from hard drive, so those on a tight budget cannot afford it.

*ProVector* promised to be 'the' illustrator for the Amiga, but it ended up falling short in the professional features department, and has a quirky user interface that is often more of a hindrance than a help. But at least a PostScript module is available, albeit at extra cost, so that standard Encapsulated PostScript files can be imported, edited and exported, making it possible to bring work files home at nights and weekends from your office Mac or PC, continue to work on them on your Amiga, then take them back to work to load back into the Mac or PC. But *ProVector* is expensive and does take some getting used to.

### ESTABLISHED STANDARDS

The cheapest Amiga structured drawing package is *Expert Draw*. It lacks powerful features, so it can't really be classed as an 'illustrator', but it runs quite quickly, so is more





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# ARNOR



them fine, so did *Wordworth 2*. The PostScript Import module of *ProVector* also accepted them happily, all of this being proof enough for me that *Art Expression* files are indeed EPS format. However *Art Expression* cannot import and display EPS files created with other packages; it'll import them, but you get the infamous crossed-out rectangle that can be scaled and rotated and saved as part of another EPS file, and can only printed to a PostScript device.

Gold Disk's *Pro Page 3* and *Pro Draw 3* also accepted *Art Expression* documents as EPS files, but when sent to a PostScript device some of the shades printed incorrectly, and one area that had been blended came out as a single shade of grey. I can't say for sure, but considering that packages from three other companies handled them correctly, this would appear to be a bug or a badly-implemented routine in Gold Disk's PostScript output.

## FURTHER FORMATS

*Art Expression* pages, drawings, groups of drawings, or any part of a drawing, can be exported in two other standard file formats, DR2D or *Illustrator88*.

DR2D is the Commodore-adopted Interchange File Format (IFF) standard for structured drawings – as ILBM is to Amiga bitmaps and 8SVX is to Amiga sound samples, so DR2D is to Amiga structured drawings. Any Amiga package that imports structured drawings should, in a perfect world, be able to import DR2D; but alas, the Gold Disk DTP products – *Pro Page*, *Pro Draw* and *PageSetter* – support only Gold Disk's 'clip' format as produced by *Pro Draw*.

*Illustrator88* is a file format saved by *Adobe Illustrator*. It's an old version of the file format, so certain structured drawing features of the latest versions of *Adobe Illustrator* (3.x/4) are not supported. This will cause problems with importing certain types of graphics, and is one reason why Gold Disk prefers to stick to its own 'clip' format. Soft-Logik says that it is working on *Illustrator* 3.x/4 format for both *Art Expression* and *PageStream* and will switch to it in the future.

The DR2D file format is itself quite limited – another reason why Gold Disk prefers to stick to its own 'clip' format – and Soft-Logik is currently working to propose a new DR2D standard that will have every feature handled by PostScript.

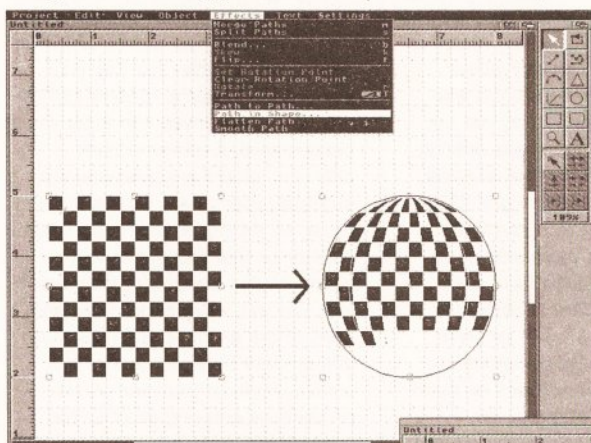
## A TOUCH OF PAINT

Drawings can also be exported as IFF-ILBM files should you feel the need to import your work into a normal bitmap painting program, like

*Deluxe Paint* for example. It's possible to turn the bitmap back into a structured drawing afterwards by using the 'Trace' feature of the supplied *BME* utility (BitMap Editor), but you will always sacrifice quality in doing so. I'll be telling you more

Compugraphic and PostScript formats. (This is actually the *FontDesigner* program from BSC in Germany that I was wittering on about here some months ago.)

Words are placed on the page by means of a requester that allows you



**Above:** Warping objects into shapes is one of *Art Expression*'s most powerful features. At a higher magnification you would see that the pattern is all there in the circle. **Right:** Text can be warped into any shape, just as objects can

about auto-tracing bitmaps a little later in the review.

## WORDS AS WELL

The typeface format supported is PostScript Type 1. Period.

Soft-Logik's 'Reviewer's Notes' point out that *Art Expression* is a PostScript illustration program, so supporting the Compugraphic typeface format is not sensible. I guess they were worried that some people might be concerned that the program does not support the Amiga scalable typeface standard, but I for one am in complete agreement with the Type 1 standpoint because PostScript is the desktop publishing industry standard, and this must take precedence.

The full package of the 'Classic 35' PostScript typefaces is provided with *Art Expression* – that is, the 35 typefaces that many PostScript laser printers have built-in – and these may also be used with *PageStream* or any other package that supports the PostScript Type 1 format.

## THE RIGHT TYPE

The *FontManager* utility that comes with *Pro Page*, *Pro Draw* and *PageSetter* will happily convert these typefaces to Gold Disk's Compugraphic format; and *Fountain* can then install them as Amiga Compugraphic format should you want to use them with any program that supports Compugraphic typefaces. Soft-Logik will be releasing a package called *TypeSmith*, a typeface editor that will be able to convert between

to select the typeface and the point size, which may be asymmetrically scaled. Any size from 0.01pt to 183,000pt can be specified.

The text which is to be placed on the page is typed into a small gadget. Up to



127 characters can be entered, but they all have to be on one line. If several lines of text are required you will have to enter and place them separately. This is the way rival package *Pro Draw* used to do it, although even that old version of the program had some control codes to force carriage returns; these days, no doubt in response to requests from users, *Pro Draw* allows you to type text directly on to the page in much the same way *PageStream* does.

Soft-Logik is perhaps guilty of double standards here – on one hand the company makes a big noise about the way text can be typed directly on to a *PageStream* page, which is one of the features that *PageStream* users adore, yet on the other hand it says that a single line of up to 127 characters should be sufficient for most illustration applications.

Yeah, OK, it "should be". But if it isn't, tough.

Text is handled in two ways. After placing it on the page it remains a text object that can be edited by using that requester again. Handles

around the edge of the bounding box enable you to scale the text by hand, plus you can flip and rotate it. After scaling, rotating and flipping the text remains completely editable, even to the point of changing the typeface.

## ONE-WAY CONVERSION

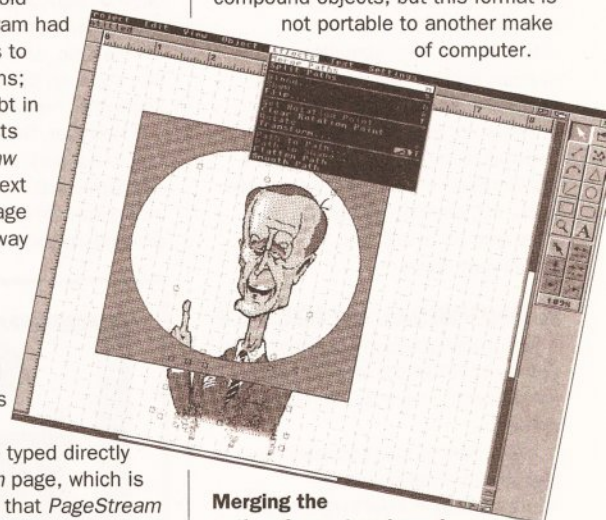
If you want to do anything more drastic to the text, a special effect like skewing or blending for example, then the text object first has to be converted to a graphic. Now, once it is a graphic, you can't convert it back to a text object, and there are good reasons why you may want it to remain a text object. You see, as a text object it gets saved in the file as a string of text and instructions as to what typeface to use, in what size, colour and so on. So when the illustration is imported the typeface

information is retrieved separately from disk. The result is perfect Type 1 typefaces.

But as a graphic it will almost certainly contain merged paths – every letter that has a 'hole' in it somewhere, A P Q O R for example, is composed of merged paths. To

put it another way, it is a 'compound object'. And *Illustrator88* format does not support compound objects, so graphics with holes in them will import without the holes.

DR2D format does support compound objects, but this format is not portable to another make of computer.

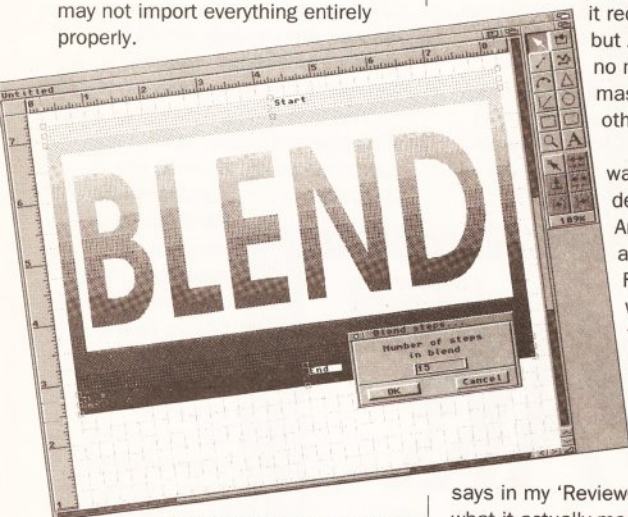


**Merging the paths of a rectangle and an ellipse creates a compound object with a hole in it that can become a frame for ol' "Read My Lips"**

As Soft-Logik has pointed out to me, this is a file format problem that is not entirely in its developers' own hands to solve. When they've implemented the newer *Illustrator*



3.x/4 format, the specification for which was only released just as *Art Expression* itself was being released, it will no longer be a concern. For the moment, any illustration that contains compound objects is best saved as an *Art Expression* EPS file if it is to be re-imported into *Art Expression*, or exported as IFF-DR2D if it is to be imported into *PageStream*. The latest *PageStream* DR2D import module (2.1.9) handles *Art Expression* DR2D files perfectly, earlier versions of the DR2D module may not import everything entirely properly.



**Giving text a gradient fill is a slightly complex task of creating a compound object mask to place over a blended area. The manual describes the technique quite well, and a little experimentation will go a long way**

Some readers may feel that another solution would perhaps have been to implement Gold Disk's 'clip' format, but again this is not portable across different makes of computer, and, as Gold Disk has never released the 'clip' specification, support for that file format will of necessity have to be reverse engineered, and therefore be somewhat imperfect. *PageStream*, for example, imports most *Pro Draw* clips, but sometimes screws up when you try to edit and/or manipulate them.

## A UNIVERSAL LANGUAGE

A better Amiga-specific solution is an enhanced IFF-DR2D format, which, as I mentioned earlier, Soft-Logik is proposing.

One further solution would be to implement a full-blooded interpretation of PostScript, thus allowing EPS files to be imported, displayed and edited, but this is a very time-consuming and memory-hungry operation. Those readers who are calling for displayable and editable EPS files in DTP software are not living in the real world. If the Amiga ever gets itself a PostScript screen display (like NeXT machines), perhaps we'll be in business, but

even then, for reasons of speed, this is only going to be practicable with at least a 68040 processor.

## TOOLED UP FOR ACTION

Feature-wise *Art Expression* has all the usual illustrator tools for drawing and editing lines, boxes, ellipses and paths. Points can be easily added to paths, or deleted, split or joined.

If you are not used to the way illustration programs work, you are bound to find the technique difficult at first. Like all skills, it requires practice, but *Art Expression* is no more difficult to master than any other illustrator.

The program was designed and developed by Scott Anthony, an accomplished San Francisco artist, which means that the needs of artists have been considered at every step in its creation. Well, that's what it

says in my 'Reviewer's Notes', but what it actually means is that the needs of Scott Anthony and his mates have been considered at every step. I'm not complaining, merely pointing out that there is more than one way to skin a cat – any argument about which way is better is simply a matter of personal preference.

There's not a lot wrong with the way *Art Expression* does things. Most operations work the way you expect them to, and the user interface has been designed so that beginners can use buttons and requesters and the on-line help, and experienced users can crack on by using the many keyboard short-cuts.

However, there is no built-in macro support, and ARexx is not supported either, so creating automated time-saving, customised drawing operations is not possible.

This omission will only be of concern to technically minded users, and perhaps Soft-Logik left it out so as not to frighten off beginners who might be blinded by the appliance of science. Nevertheless, to 'power users' the omission of ARexx support is almost unforgivable these days.

Full control over colour definition is provided in either the CMYK or RGB colour systems. Sliders can be set by mouse, or you can enter exact percentages. A million slightly different colours are possible, but obviously you cannot display all of them, so *Art Expression* dithers the colours so that thousands can be approximated on-screen. They won't look like this when printed, but the point of the exercise is so you can differentiate between colours on-screen. Professionals will almost certainly be entering exact CMYK percentages from a colour chart, so there's no absolute need to see an exact colour on-screen. Colour palettes can be saved separately, allowing you to build up databases of different CMYK colour charts.

Although *Art Expression* works on the 1200 and 4000, it does not yet take advantage of the new AGA screen modes, so the on-screen colour palette is limited to 16 colours, and all possible dither patterns of those colours.

## FILLING THEM IN

Percentage fills or 'tints' are supported. For example, selecting the colour Red and specifying 50% results in a shade of pink. Shades of grey can be similarly created by specifying percentages of solid black. Neither the *Illustrator88* nor the DR2D file format supports percentage fills, so each tint gets written out as a separate colour, and will be imported as something odd like 'UnnamedF7000000'. This state of affairs will (once again) be sorted out in the latest *Illustrator* and/or newly proposed DR2D file formats.

Many special effects are possible using the tools provided in

the 'Effects' menu. Paths can be merged to create compound objects, the most obvious use of which is to create objects with see-through 'holes' in them. Objects or groups of objects can be skewed and flipped, or rotated to any angle; a Transform feature enables you to duplicate, scale and rotate an object or group any number of times.

It doesn't do gradient fills. Instead *Art Expression* has a 'Blend' feature – while it is possible to reproduce any gradient effect (and more) using blends, the masking technique takes a little getting used to and can be a bit fiddly at times. Once again, the main reason for *Art Expression* implementing blends instead of gradient fills is that the *Illustrator* and DR2D formats don't support gradient fills.

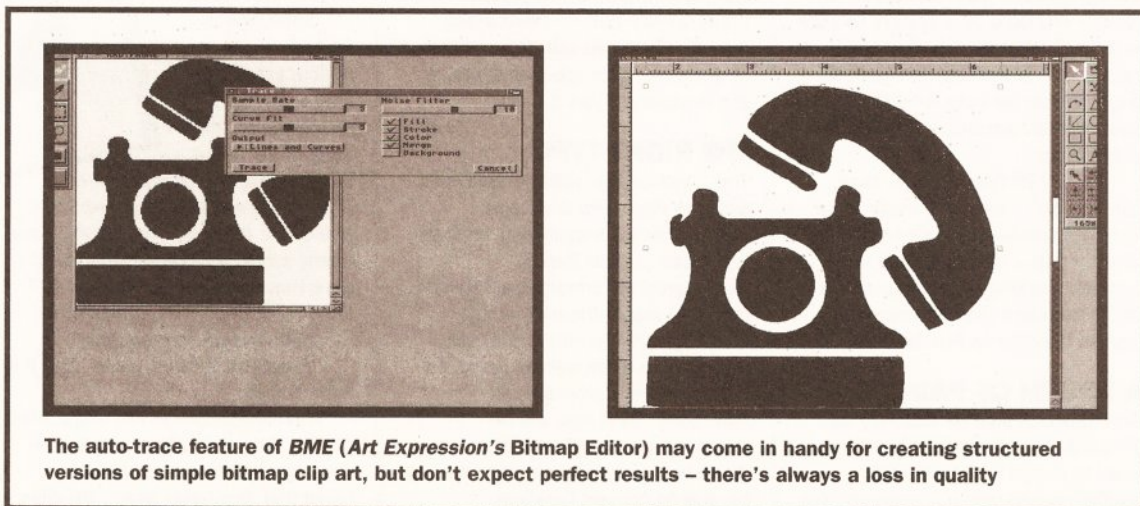
(*Pro Draw* and *Pro Page* users may by now have realised why Gold Disk invented, and sticks to, its own 'clip' format.)

## A DISTORTED VIEW

Perspective or distortion effects are achieved by 'filling' a shape with an object, a technique called 'warping'. If you've ever used the 'Wrap' feature in *Deluxe Paint*, you'll know exactly what I mean. For instance, it's possible to draw a circle and then warp some text into the circle so that it looks like it has been wrapped around a hemisphere.

Objects, as well as text, can be warped into any shape you like. However I've had mixed results warping groups of objects. Sometimes it works, sometimes it doesn't. The pattern seems to be that the more complex the drawing, the less chance that warp will work. A little undocumented feature there for Soft-Logik to work on.

But all things considered, *Art Expression*'s drawing tools are well up to the job, with options to flatten and smooth paths, and to join two points together – useful features that are lacking in *Pro Draw*. There's even an automatic pie chart creator.



The auto-trace feature of BME (*Art Expression*'s Bitmap Editor) may come in handy for creating structured versions of simple bitmap clip art, but don't expect perfect results – there's always a loss in quality



Earlier I mentioned the auto-trace feature, which is able to turn a bitmapped graphic into a structured drawing. This facility is provided as part of the *BME* program – the BitMap Editor that also comes with *Hotlinks Editions*. It'll trace any bitmap, no matter how many colours it contains or how complex it is, but in practice it is only sensible to trace simple pictures with few colours.

Various options give you control over the accuracy of the trace, but you shouldn't expect great results, even at the highest accuracy. Converting a bitmap to vectors is an inexact science. It takes time, and the results are almost always not worth the wait. You may find it useful while you are learning how to draw using *Art Expression*.

The trace facility is the only reason *BME* is included with *Art Expression*, although you may also find it handy for cropping bitmaps for later use in *PageStream*.

## A CHOICE OF OUTPUT

*Art Expression* handles printing via Preferences in the normal Amiga way. There are no program-specific printer drivers, à la *PageStream*. Also there is no print set-up required within *Art Expression* itself, apart from the option of specifying which part of the page to print, as opposed to the whole page. All printer settings are selected via Workbench Printer and PrinterGfx preferences.

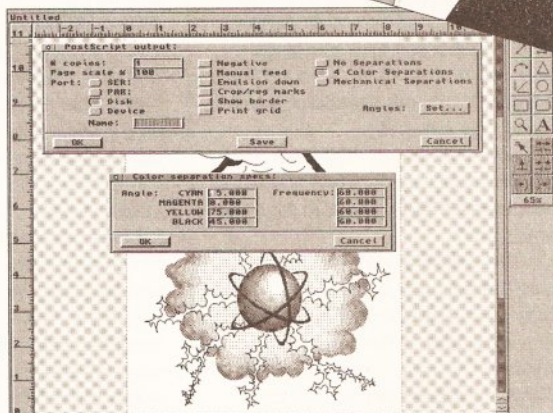
Now, I had problems printing to Preferences with version 1.00 of *Art Expression* – the output was too large and the aspect ratio was wrong. Soft-Logik sent me version 1.01, which supposedly fixed this bug, but now my 500, 2000 and 3000 all crash when attempting to print via Preferences from *Art Expression*. Soft-Logik says that some five per cent of users have reported that this happens with 1.01; the rest seem to be fine.

Although at first this Preferences printing problem may seem severe, I see *Art Expression* being used by two kinds of users – professionals who will be more concerned with PostScript output, and *PageStream* users who will be more concerned with being able to export their drawings and import them into *PageStream*. Neither kind of user absolutely requires *Art Expression* to print to Preferences printers, so the problem can be worked around until Soft-Logik sorts it out.

Version 1.02 should be released by the time you read this, and everyone who returns the registration card will get a free upgrade to 1.02, along with a Bonus Disk containing seven more PostScript typefaces. Let's hope the printing bug is quickly tracked down and stamped on.

*Art Expression* naturally gives you full control over PostScript output, which can be to SER:, PAR:, disk or another named device.

Four-colour separations are possible; screen angles and frequencies can be adjusted in 0.0001 degree/lpi increments; page scale, negative, emulsion down and crop/registration marks can all be selected. There's no rotation gadget, so you'll have to do this by hand and adjust your page size accordingly if necessary.



**Art Expression's PostScript output options are fairly comprehensive, and good enough for most needs**

The separations are saved in one file, and there's no option to save each separately.

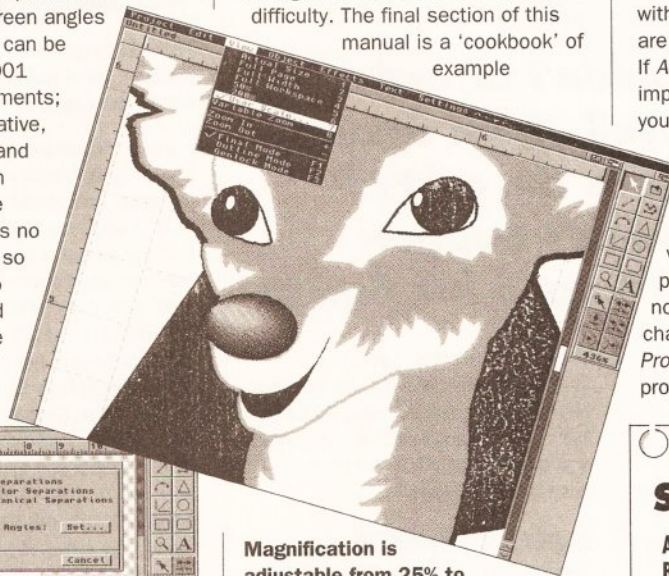
Mechanical or 'spot' colour separations are also catered for.

The manual goes into some detail about PostScript printing, explaining about resident fonts, downloaded fonts, screen angles and

frequencies, separations, and some of the limitations and known pitfalls of PostScript.

## MANUAL ASSISTANCE

There are three manuals provided with the package. The two *Art Expression* manuals are spiral bound, so they fold flat easily, and they are extremely well written. The 'Lessons' manual gently introduces you to the subject, and takes you through three projects of progressive difficulty. The final section of this manual is a 'cookbook' of example



**Magnification is adjustable from 25% to 3200%, with several preset zoom levels, just like in PageStream. Note the 'Outline Mode' menu entry, which saves having to wait for line weights to draw and shapes to fill**

drawings with a step-by-step guide to how each drawing was created.

After working your way through the 'Lessons' manual you are ready to dip into the main 'User' manual, which is overflowing with examples of every feature from drawing a line to masking a compound object in order to create a blend. Structured drawing is made a lot easier to learn thanks to the effort Soft-Logik has put into the manuals.

The third manual is the one for *BME*, although the documentation for the auto-trace feature come in an 8-page loose-leaf addendum.

*Art Expression* is certainly a competent illustration program and makes a good companion to *PageStream*. An extra program is supplied that will convert *Pro Draw* 'clips' into IFF-DR2D format, so unhappy *Pro Draw* users, if there are any, will be able to change brands without too much pain. But keep in

mind that the DR2D format doesn't support some of the advanced 'clip'

format features – gradient fills and percentage fills being the most notable – so not all *Pro Draw* clips will convert properly.

## LUCK OF THE DRAW?

If it's a question of choosing between *Pro Draw* and *Art Expression*, the deciding factor will probably be whether you are using a Gold Disk or Soft-Logik DTP package in conjunction with it. *PageStream* users will feel much more at home with *Art Expression*, *Pro Page* users are certainly better off with *Pro Draw*. If *Adobe Illustrator* compatibility is important to you, *Art Expression* is your only choice.

*Art Expression* is by no means perfect, but it's early days yet. It shows great promise and is light years better than the first version of *Pro Draw* was. The program will get better and better, no doubt about it, and has every chance of quickly taking over from *Pro Draw* as the stock illustration program for the Amiga. **AS**

## SHOPPING LIST

*Art Expression* ..... £150  
By: Soft-Logik Publishing Ltd  
☎ 0628 784006

Available from:  
HB Marketing  
☎ 0753 686000

## CHECKOUT ART EXPRESSION

### Ease of Use ●●●●○

The interface is well designed. It both helps the beginner and enables the expert to crack on more quickly.

### Features ●●●●○

There's plenty in there, but lots of room for improvement with regard to AGA support, better export file formats, and some sort of macro system.

### Documentation ●●●●○

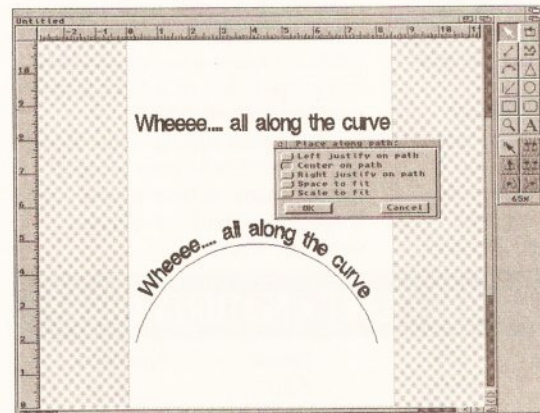
Superb manuals. One or two areas could perhaps do with more explanation, but then Soft-Logik would run the risk of blinding beginners with science.

### Price Value ●●●●○

With *Pro Draw 3* now selling at a discounted price of around £70, *Art Expression* is twice as expensive. But then you do get 35 PostScript Type 1 typefaces thrown in, a package that would normally cost you more than £100 on its own!

### Overall rating ●●●●○

Every bit as good as *Pro Draw* in its own way. There are things each package can do that the other can't, but the deciding factor is probably that 'twice as much' price tag. Ouch!



**Text can be quickly aligned with any path or curve**



# Lasers to stun

**Thought you couldn't afford a laser printer? Well, think again! Jeff Walker counts the cost of hooking Panasonic's budget-priced KX-P4410 up to his Amiga**

**A** laser printer is a laser printer, isn't it? Well, at least that's the impression you're left with if you believe everything you read in the adverts.

But there are subtle differences that make some laser printers better than others. Not just in the speed, typefaces, resolution and accessories departments, but also in actual print quality, which depends upon the drum, toner and print mechanism itself.

That's why, for laser printers that on the face of it seem fairly similar, prices can range from about £500 to £2000 or more.

The Panasonic KX-P4410 is a low-priced laser printer. While its recommended retail price (£992) appears quite high, its actual 'street price' is much less – just under £500 – putting it well and truly in the 'budget' class of laser printers.

It comes with 512K of internal memory, which is fine for your basic word processing needs, using the printer's internal typefaces. But if you want to desktop publish or print graphics on to A4 pages, you'll need at least another megabyte of memory. The RAM motherboard fitted with 1Mb of memory will cost about £130, and further memory modules (the board will take up to 4Mb) should cost about £30 per megabyte. Thanks to the drowning pound, RAM prices are fluctuating all over the place at the moment, so it's difficult to be precise. And it pays to

shop around; I rang several suppliers. The highest I was quoted for KX-P4410 memory was £153 for the motherboard and first megabyte, and a whopping £120 for each subsequent megabyte.

## BUILT-IN BENEFITS

The internal typefaces are good old fixed-width Courier and the proportional Century – normal, bold and italic versions of both. Courier can be printed in 6 point, 7.2pt, 8pt, 10pt and 12pt, although the three small sizes don't have a bold style and the smallest doesn't have italics either. Century (normal, italic and bold) comes in 10pt only.

Although the KX-P4410 has a Hewlett-Packard LaserJet IIP emulation, there are no HP typefaces provided, so in this mode everything gets printed in the default typeface, Courier. In Panasonic LP mode, which is essentially HP IIP emulation with a few extras, you can get at all sizes and styles of both Century and Courier. I tested it without a problem in text-only mode with *Protext 5.5* and that program's KX-P4420 driver. With *Wordworth 2* and the standard EpsonQ printer driver it worked fine in text-only mode except that I kept getting a blank page before and after the actual page of text.

For printing graphics you can leave it in Panasonic LP mode and use the HP\_LaserJet driver. Top resolution is 300 dots per inch. As well as the obvious art programs (*Deluxe Paint* for example), graphics

**For text or graphics printing, laser quality is now well within the reach of the home user**

printing includes any application that prints using Amiga bitmap fonts, Compugraphic typefaces or any other kind of scalable 'outline' typeface. Printing graphics and scalable text takes longer than text-only ('printer font') printouts, and waits of between 15 and 30 minutes per page, or longer, will not be unusual for output from programs such as *PageStream*, *PageSetter*, *Pro Page*, *Wordworth*, *Final Copy* and the like. How long it takes to print a page depends on how many different scalable typefaces and point sizes have to be calculated.

And don't forget that you'll need a 1Mb printer memory upgrade to be able to print A4 pages from this type of program.

The KX-P4410 is not a PostScript laser printer, and there is no PostScript upgrade that can be fitted at a later date. If PostScript is important to you, it might be wiser to plump for a laser printer that can have a PostScript 'card' fitted should you decide you want it.

## RUNNING COSTS

Once a page has been 'imaged' by the KX-P4410 it can be duplicated any number of times at a rate of five pages per minute. The cassette holds about 100 pages of normal thickness paper and can take A4, US Letter, US Legal and Executive size sheets. A number of standard sized envelopes can also be fed in via the cassette, or it'll take a fair number of standard sheets of laser printer labels (including a lot of Avery ones) and some makes of 3M and Scotch overhead projection film.

Apart from printing media there is the cost of three other kinds of 'consumables' to bear in mind – the printer toner, the drum and the developer unit.

The toner lasts for about 3,000 'normal' printouts (pages of text, that is); for heavy graphics printing that could drop to as few as 1,000 printouts or less, depending on how dark your pictures are. There's a print density dial on the side of the printer that enables you to control how much toner is being used. Toner refills cost about £20.

The drum will have to be replaced on average every 12,000 normal printouts; that currently costs about £70. The developer unit will last for 90,000 normal printouts, at which time it'll cost you about £80 (at current prices) to replace it.

## I SPY WITH MY DPI

Print quality is not the best you'll ever see from a laser printer, but then this is a 'budget' model so you can't expect the earth. Text printouts are fine, using either the internal typefaces or scalable typefaces. You'd be hard pushed to tell the KX-P4410's text output from that of any other 300 dpi laser printer. Graphics output, however, which depends on dither patterns to simulate colours and shades of grey, is a bit coarse, and this is because the dots of toner that it puts on the page are a little on the large size compared to some higher quality lasers.

That's not to say the graphics output is bad – far from it. I'm merely pointing out that it is possible to get better output, even at 300 dpi, provided you are prepared to pay a little more. The KX-P4430 model for example, which costs about £300 more (at street prices), has a feature called 'Satinprint' that enhances the output. Comparing the KX-P4410's graphics output with a friend's Epson EPL-7500 300 dpi output makes the Panasonic look poor. But then the EPL-7500 does cost twice as much as the KX-P4410! **AS**

## SHOPPING LIST

**Panasonic KX-P4410..... £499.99**

Available from:

Indi Direct Mail

☎ 0543 419999

## CHECKOUT KX-P4410

Features	● ● ● ● ●
Print Quality	● ● ● ● ●
Speed	● ● ● ● ●
Value	● ● ● ● ●
Overall rating	● ● ● ● ●

## FEATURES CHART • FEATURES CHART • FEATURES CHART • FEATURES CHART

Model	Supplier	Memory	Expanded	DPI	Speed	Typefaces
KX-P4410	Panasonic	512K	4.5Mb	300	5 ppm	2

Emulations: HP LaserJet IIP, Diablo 630, Epson FX-86e/800, IBM Proprinter II, Panasonic KX-P1180.



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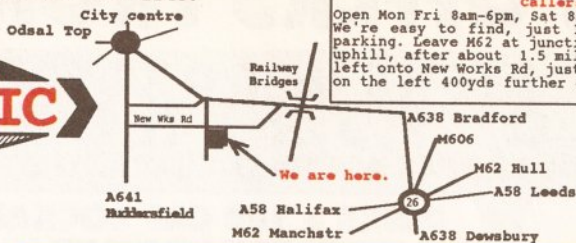
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**A**s a communications system MIDI is pretty much trouble free. But snags can arise from time to time and, particularly for beginners, it can be difficult to figure out what's gone wrong. You might, for instance, have connected up a couple of leads the wrong way around, or are perhaps using a MIDI lead that is broken inside. On the other hand, your synth, due to the way it has been set up, may not be transmitting the messages that you think it is.

The key to solving most MIDI problems is to go about it in a methodical way: ask yourself which faults could fit the known facts, and then try to find ways of eliminating each one from your investigations. If you tackle these things from the data source and trace your way along in a logical fashion, it usually doesn't take more than a few minutes to come up with the right answers. For sequencer-transmitted data you might start at the Amiga end of the set-up. This usually poses the question: how can you tell whether the Amiga's serial port is transmitting anything? An indicator light on the MIDI interface can provide a useful clue. If not, perhaps your synth has a light which flashes as data is received.

As with most things, a bit of common sense goes a long way in MIDI fault-finding. Of course, it does pay to start by considering those things which, from past experience, seem likely candidates. If, say, your synthesiser triggers the sequencer when you are recording but on replay data does not come back to your synth, then there is a good chance that either the lead connecting your interface's MIDI OUT to your synthesiser's MIDI IN is faulty, or that your synth is set to a channel number which is different to that which the sequencer is transmitting on.

### FOLLOW THE LEAD

So, your first instinct should always be to check these obvious things first, making sure that the correct MIDI sockets have been used, and also that the connectors have been properly pushed in. If the connectors on the lead look OK then you should, having eliminated all other alternatives, be led to the conclusion that the lead probably has an internal break in it somewhere. So, a

reasonable next step would be to swap the suspect lead for another one. The object of this exercise is to prove (by eliminating the fault) that the connecting lead was to blame, or to prove that the fault lies elsewhere (by showing that changing leads made no difference).

### FURTHER DIAGNOSIS

These common sense arguments will usually lead you to the right conclusions very quickly, but sometimes a problem may not be quite so easy to solve. You may find yourself using particular types of MIDI messages which appear to be having no effect – in this case you often need to be able to determine whether the appropriate messages

sequencer. The one I use is called the MA36 and it is made by a company called StudioMaster, which is probably best known for its audio mixing desks.

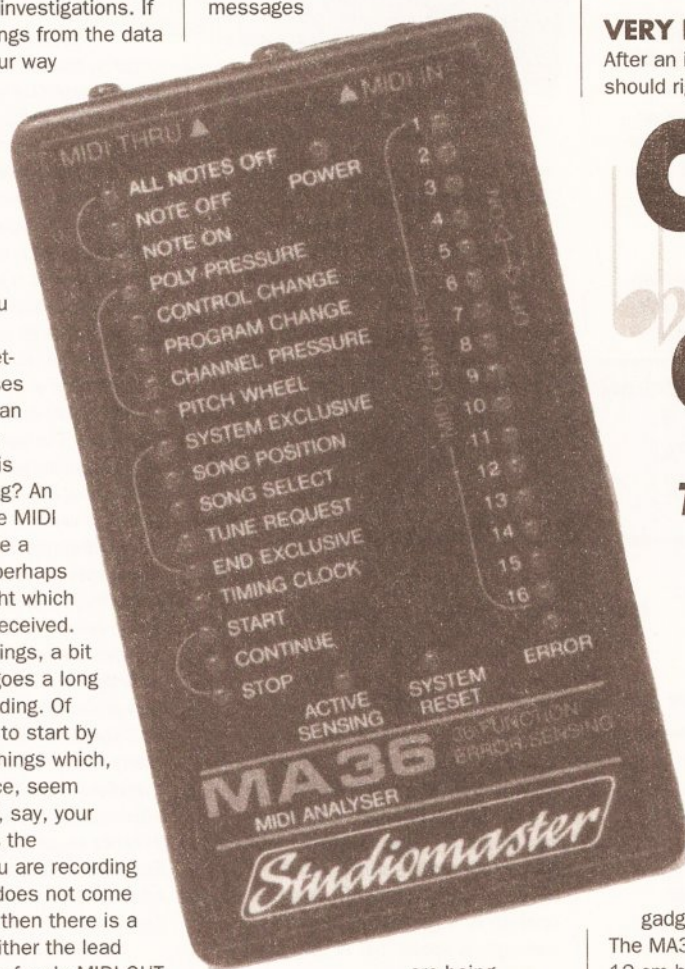
The MA36 is not a new device but it is still not particularly well-known outside serious MIDI circles. And from the letters I get about MIDI fault-finding it is clear that a lot of MIDI users could benefit from a device like this – I can tell you quite truthfully that I've been using my unit almost daily for years. It's as invaluable today as it was when I first bought it – if, as a new MIDI user, you were to ask me what I considered the most important first MIDI extra to add to a basic MIDI set-up – I'd say an MA36.

### VERY ILLUMINATING

After an introduction like that, you should rightly be curious about this

messages and displays the results on a set of LEDs situated on its front panel. The right-hand side of the MA36 display is a bank of channel indicators – these enable you to tell immediately what MIDI channels are being used. The left-hand side of the display provides details of the message types being received, so if, for instance, you want to know whether the MIDI data that is supposed to be going into your synthesiser is really there, you just take the lead out of your synthesiser's MIDI IN terminal, and plug it into the MA36. If the data is there you'll instantly see what messages are being transmitted and any associated channel numbers.

To be honest there is very little else one can say about the MA36 – except that it is one of those delightful little boxes that you don't need to be a genius to use!



# Conducting an inquiry

*There's nothing more annoying than a misbehaving MIDI message. Paul Overaa talks you through the process of tracking down those elusive musical misdemeanors*

The MA36 Analyser from StudioMaster is a brilliant MIDI fault-finding tool

gadget, so here are some details.

The MA36 measures about 7 cm by 12 cm by 3 cm, has an on/off switch, can be powered by a battery or mains adaptor, and, most important of all, has two MIDI sockets: MIDI IN and MIDI THRU.

As MIDI data passes through the unit the MA36 identifies the

are being transmitted in the first place.

Now if you know a bit of BASIC, C or some other computer language, it is actually quite easy to write your own MIDI diagnostic programs for identifying the various message types being passed through the MIDI system. Of course, the trouble with this is that you cannot use your Amiga as a diagnostic tool while using it as a sequencer at the same time – because the Amiga only has one serial port.

Now, you could get another Amiga for this – but a far cheaper solution would be a separate MIDI diagnostic device that you can use at the same time as your Amiga

## CHECKOUT MA36 ANALYSER

### Ease of Use

To use it you just plug the MA36 into the MIDI line and look at it – it really is as simple as that.

### Features

Has all the basic facilities you'll need for conventional MIDI fault-finding.

### Price Value

The price of this unit has dropped over the years, but it is unlikely to drop further. At its current price it really is outstanding value for money.

### Overall rating

The MA36 is a brilliant little gadget – and if you don't believe me, you should find someone who's got one and check it out for yourself!

## SHOPPING LIST

MA36 MIDI Analyser.....£28

Available from:

StudioMaster

☎ 0582 570370



**A** lot of musically-minded new Amiga owners have joined us over the past few months, and some will doubtless be looking for help within these pages. Since it's been a while since we last looked at the fundamentals of MIDI, now seems a good time to provide a whirlwind tour of some of the basic terms and to explain what they all mean.

simply a computer program that is able to read, store, edit and replay the messages generated when MIDI instruments are played. Nowadays this software is commonplace and there are many established Amiga programs to choose from.

Not only has sequencing made life easier for the serious and experienced musician, but it has also opened the floodgates for everyone else. It is no exaggeration to say that MIDI sequencers have made it possible for anyone with the slightest ear for music to sound good!

### THE BASIC EQUIPMENT

Assuming you already have an Amiga computer you will need three

other things to get started in MIDI sequencing: a MIDI interface, a keyboard synthesiser and a sequencer program. You may also need one or two connecting leads if they were not supplied with your

which plug into the Amiga's serial port, thereby providing the computer with the right physical connections and signal characteristics needed for linking up MIDI equipment. MIDI interfaces cost from

like a multi-track tape recorder. The main difference is that digital data is stored rather than audio sounds. Whichever sequencer you choose there should be an introductory tutorial in the manual and you should read, and work through, that material at the earliest opportunity.

### SYNTHETIC MATERIALS

Synthesisers are electronic 'instruments' which can create musical tones by generating (or 'synthesising'), sound waves. They can mimic other instruments such as pianos,

organs, trumpets or drums, so by owning just one synthesiser you will be able to create an almost infinite variety of different sounds.

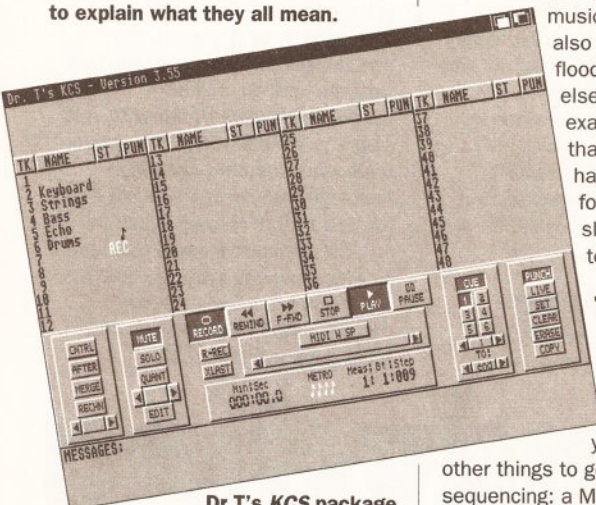
The good news here is that even the cheapest synth models can sound good, though one thing you will not get with a low-priced synthesiser is a keyboard which can sense how hard the keys have been pressed. Notes will simply be 'on' or 'off' but this is something you must learn to live with, unless you spend a lot of money on a 'touch sensitive' keyboard. For general MIDI work synthesisers need to be polyphonic – in other words, able to play many notes at once. It is also useful for the synthesiser to be multi-timbral, which means that it is able to play more than one type of sound at the same time.

Incidentally, a number of synths (mainly those designed for home and non-professional use) have amplifiers and speakers built in. However, many synthesisers do not and therefore have to be connected to a separate amplifier or speaker system in order to produce audible sounds. For in-home low-volume use you can often avoid further expense by just using your home stereo system.

Nowadays you can get not just keyboard synthesisers but also guitar synths, drum pads and a number of other 'MIDI input' devices. Nevertheless, most people tend to use keyboards for the bulk of their MIDI sequencing work, whether they are keyboard literate or not. If you have never played a piano or other keyboard before, don't panic – it is not necessary to become technically competent (unless of course you want to become so). You only need to learn enough to find your way around the piano-style keyboard.

### WHAT'S THAT DIN?

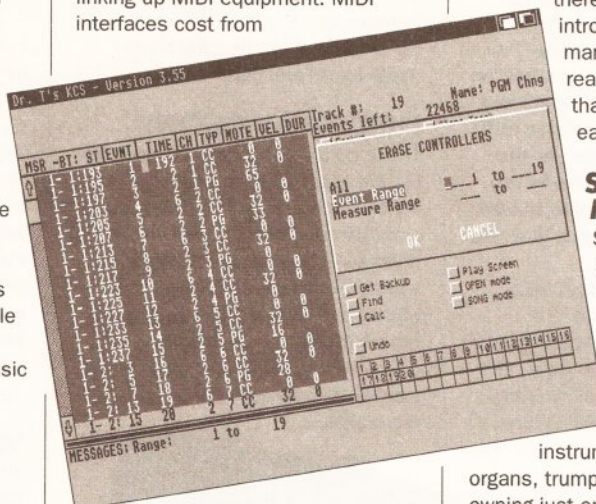
All MIDI synthesisers have at least two 5-pin DIN sockets. The one marked 'MIDI IN' is where the synth



**Dr T's KCS package is just one MIDI sequencer that is well thought of in Amiga circles**

First then, let's look at why MIDI evolved in the first place. In the early days of electronic music it was far from easy to link different pieces of musical equipment together. This was because many manufacturers created and used their own workable, but almost totally incompatible, communications arrangements. The solution, namely the development of the single 'Musical Instrument Digital Interface' standard that we now call MIDI, solved the majority of those earlier incompatibility problems.

So, MIDI is a communications system specially designed to allow musical equipment from any number of different manufacturers to 'talk' to each other using digital messages. Among other things, MIDI has encouraged the development and use of a piece of software known as the 'sequencer'. On the Amiga this is



**All MIDI sequencers offer sophisticated control functions**

around £20 upwards, depending on the facilities provided.

Sequencers vary enormously in the options they provide but all will let you record, play back and edit MIDI data. You will, for example, be able to add and delete notes, cut

Binary	Hexadecimal	Decimal	Name
1111 1000	F8	248	Timing Clock
1111 1010	FA	250	Start
1111 1100	FC	252	Stop

Three example status bytes – note that they all have bit 7 set to '1'.

status byte	note pitch	note on velocity
1001nnnn	Okkkkkkk	Ovvvvvvv

These three bytes show how a single MIDI note is transmitted.

synthesiser or MIDI interface. These are called MIDI leads and can be purchased for a few pounds from almost all computer shops.

You'll find plenty of MIDI interfaces advertised within the pages of *Amiga Shopper*. They are quite simple pieces of hardware

and paste fragments of music, change key, and improve the timing of the music you record, this last facility via the 'quantisation' options. Many sequencers adopt a tape recorder style approach – the analogy is a good one because, in concept, a sequencer is very much

## JARGON BUSTING • JARGON BUSTING

**DIN connector** – A plug/socket system found in many pieces of audio equipment (cassette tape machines, for instance, often have DIN plug connections).

**Expander** – A common name for a synthesiser sound module that contains the sound generating circuitry of a synthesiser without any keyboard. These can be used in conjunction with a normal synthesiser to add to (or, in other words, 'expand') the number of sounds it can make.

**Hex** – Abbreviation for 'hexadecimal', the base 16

numbering system which expresses numbers using the digits 0-9 together with the letters A-F.

**Pitch** – The frequency of a musical note. Bass notes have low frequencies and are low in pitch. Piano keyboard notes increase in pitch and frequency as you go from left to right across the keyboard.

**Serial transfer** – A method of transmitting information as a stream of bits sent one after the other.

**Synth** – Abbreviation for 'synthesiser'.



receives its MIDI data, and the one marked 'MIDI OUT' is where data is transmitted from. Sometimes you'll also find a 'MIDI THRU' socket – this provides a duplicate of whatever is being received at the IN terminal. Not all MIDI equipment will understand every different type of MIDI message, nor will every piece of equipment transmit every type of message. However, this doesn't usually cause much in the way of problems provided you are aware of the messages your particular equipment can send and understand.

## PLUGGING AWAY

Linking together a three-piece Amiga sequencer, synthesiser, and interface MIDI system is usually very easy. First, attach your MIDI interface to the Amiga's serial port D connector. Connect the MIDI OUT of the synthesiser to the MIDI IN of the MIDI interface with one MIDI lead – this will be the lead that, via the interface, carries data from the synthesiser to the sequencer program. Then link the MIDI OUT of the MIDI interface to the MIDI IN terminal of the synthesiser, using the second lead – it is this lead that carries information from the sequencer back to the synthesiser. Switch on, load your sequencer program as per the instructions given in the manual, and you'll be ready to start making music.

By the way, there are a few budget synthesisers which have MIDI terminals but which were not really designed for anything other than stand-alone use. Some, such as the Yamaha PSS 790 and PSS 590 models, exhibit a non-standard trait of echoing (re-transmitting) all received MIDI data through their MIDI OUT terminal, which can be unnerving if you are not expecting it. Some Amiga sequencers, including Gajit's *Sequencer One Plus*, offer a fix for this. So, if you own such a synthesiser you will be able to use it quite happily – provided you choose your sequencer software carefully.

## ACROSS THE CHANNEL

If you are new to computers and music then using MIDI can be a little traumatic, particularly when you are just starting out. However, there's no doubt that things will make more sense if you know a little more about how MIDI actually works. The MIDI standard allows there to be sixteen separate channels. These are encoded within a special class of MIDI messages, which are (perhaps unsurprisingly) known as 'Channel messages'. By setting each MIDI instrument to a different channel it's possible for them to be selective about the messages they respond to.

At the highest level MIDI recognises a whole range of other,

more general, system messages (known as 'Real Time', 'Common', and 'System Exclusive' messages). In all cases the MIDI information is sent using the digital equivalent of an 8-bit binary number called a 'byte'. MIDI messages themselves consist of one or more bytes that can be regarded as being sent one after the other. The first byte, called the 'status' byte, is always very important because it defines the type of message being sent. Any trailing bytes of a message, if they exist, are known as 'data' bytes.

So, how does MIDI distinguish between status bytes and data bytes? It uses the uppermost bit of each byte – status bytes always have the high bit (bit 7) set, so these numbers can range from decimal 128 to decimal 255 (10000000 binary to 11111111 binary). Data bytes are therefore restricted to values ranging from decimal 0 to decimal 127 (00000000 binary to 01111111 binary).

For instance, Real Time messages are all just one byte long – so the status byte is the message itself. Some example definitions are shown in the table immediately opposite on the facing page.

## MESSAGE RECEIVED...

As an example of a typical channel message here are some details of the one that is used to turn notes on. Three pieces of information are usually sent when you press a note on a MIDI keyboard – the 'note on' status byte, the 'key number' (which represents the note's pitch), and a 'note on velocity' byte. This latter value represents the speed at which the note was struck. Keyboards without touch sensitivity usually transmit a velocity value of 64 for all notes played.

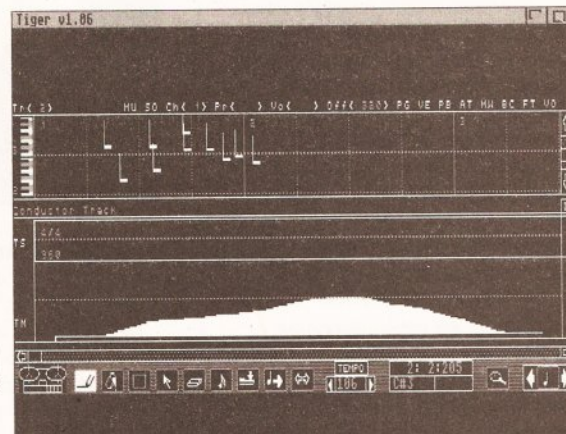
There are a great many other MIDI messages available including a whole range of general and

sounding. There is even a set of mode control messages which define a unit's response to MIDI voice messages. On top of this, custom messages known as 'System Exclusive' (or 'Sysex') messages are also available. With these only the outside of the information packet is fixed – the internal contents are specified by whoever created the message in the first place.

So, now that we know how MIDI messages are put together, one question still remains: when do these messages get transmitted?

Adjusting a control knob or pressing a note on the keyboard will usually

what is going on as you play. Sequencers are not at all interested in the sounds being made – just the MIDI messages. These can then be stored, manipulated, and re-transmitted, according to the rules outlined in the MIDI standard.

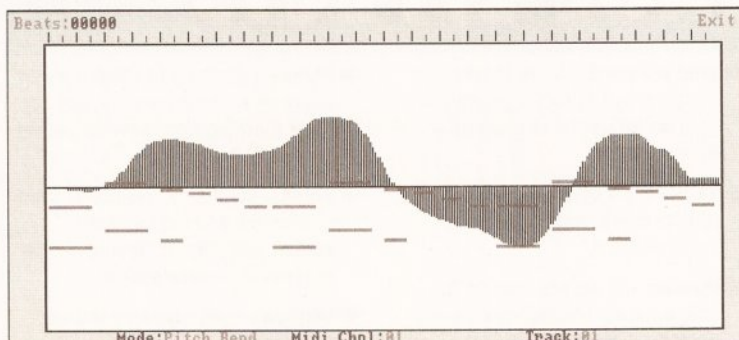


Many MIDI editing functions can be operated via the mouse

# Mastering



**The Musical Instrument Digital Interface has revolutionised computer music-making. Paul Overaa explains its 'ins' and 'outs' – and its 'throughs'**



The MIDI editing screens of some sequencers can look quite spectacular

specialised controller messages. It is, for example, possible to connect or disconnect a synthesiser keyboard from its sound generator circuits by using certain local control commands. A channel-specific 'panic button' message is also available that cancels all notes currently

cause streams of number-based messages to be transmitted at the MIDI OUT terminal.

## SEQUENCE OF EVENTS

When you connect a sequencer into a MIDI system it is able to 'read' all of these MIDI messages and 'record'

It is not worth looking in detail at all the messages defined in the MIDI specification, as many of them will make little sense until you've had some hands-on experience with your own equipment. The important thing to remember is that whenever you press a key on a keyboard, select a program setting, or whatever, then your actions may well be translated into a MIDI message. I say 'may be' because the MIDI standard does not exactly specify what transmission or reception facilities a particular piece of equipment should have. Nor does it specify the extent to which individual pieces of MIDI equipment should implement all the various possible MIDI facilities. These can, and often do, vary enormously from synthesiser to synthesiser. You'll just have to try them and see! **AS**



**W**hat does the name *Adorage* mean to you? Not a lot, I would suspect.

What if I tell you that the ADO part is an acronym? Still doesn't ring a bell? OK then, let me spell it out...

ADO was a term originally used to describe an early video effects device manufactured by Ampex – the initials stand for 'Ampex Digital Opticals'. What it did was manipulate a video image to provide effects such as stretching, compression and so on – effects which may seem crude by today's standards but which were nevertheless a huge breakthrough around 10 years ago when the hardware was first unveiled. Now, in the 1990s, we have processing power many magnitudes above these early machines and even the Amiga has been recruited to flip and shatter images all over the place. Hence *Adorage*, a new software product

**"Adorage was first developed... for a professional TV studio"**

developed by German company ProDAD, published by HS&Y and distributed here by Micro-PACE UK.

Now, *Adorage* isn't the first program to do special effects on images – Aegis's *AniMagic* program has been around for several years and has proved that Amiga images can be spun and peeled just like any other, though with the penalty of long processing times and not entirely smooth playback. Nevertheless,

*AniMagic* was a flexible and usable program, if a little difficult to get to grips with at first.

But that's the past, now it's back to the present and *Adorage*. The thin manual tells us that *Adorage* was first developed as a custom program for a professional TV studio to

then be loaded into *Deluxe Paint IV*, and played as an animation – though the playback is noticeably jerkier than when using SSA format.

### HIGHLY EFFECTIVE

Setting the program up and using it is pretty straightforward. First locate

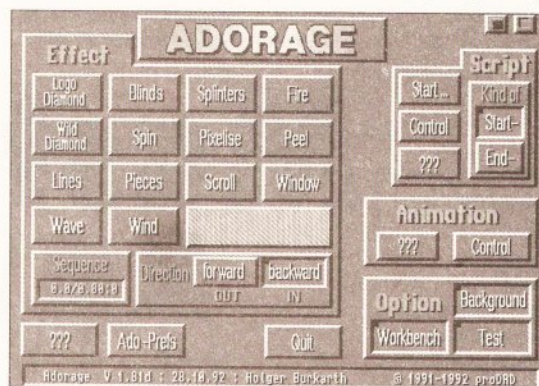
your images – but bear in mind that *Adorage* will refuse to use them unless they are interlaced. HAM, 24-bit and HAM-8 are also rejected, so you're pretty limited in your choice of input. Fortunately, *Adorage* does handle overscan OK, so all is not entirely lost. And, although

*Adorage* can have both foreground and background pictures in an animation, they must have the same resolution and, for the sake of image integrity, identical colour palettes.

Next you must decide what effect to use – from a choice of fourteen main categories each with multiple subchoices – and you're pretty much in business. *Adorage* will then

calculate the animation and store it ready for playback. The first surprise is how quickly an animation can be rendered, although obviously this is governed by the type and length of effect chosen, as well as the image complexity and the speed of the Amiga. The second surprise is that SSA format really is smooth, both in motion and visually, though obviously how smooth the motion is depends on the memory configuration of your Amiga and the size of the animation, since SSA anims are played back from RAM.

The smoothness is obtained by drawing the sequence of animation frames as 'Half Frames' – which might be best described as the equivalent of one 'field' of video (you might remember that two fields make a standard 'frame'). This results in



### Behind this simple user interface lurks a host of features

provide fast processing of effects and smooth, fast playback using its own Super Smooth Animation (SSA) format – which is at present incompatible with any other software, except the included Player utility. However, you can save the images as a sequence of IFF files which can

And, although

Next you must decide what effect to use – from a choice of fourteen main categories each with multiple subchoices – and you're pretty much in business. *Adorage* will then

## ADORAGE EFFECTS

Here's a quick spin through *Adorage's* effects selection. And remember – all of the effects described have more than one (and often many) variations.

- **Logo Diamond** – a variety of effects based on revealing and concealing an image in rectangular sections.
- **Blinds** – vertical and horizontal 'Venetian Blinds', with between two and five slats each.
- **Splinters** – breaks the image into variously-sized, shifting, rectangular chunks.
- **Fire** – segments of the image fly around in an explosion-like effect.

- **Wild Diamond** – uses random squares (not in fact diamonds, despite its name) to build up a screen picture.
- **Spin** – a set of circular wiping effects which build images up using wedges.
- **Pixelise** – gradually reveals the image from a chunky version of itself by making the 'pixels' progressively smaller.
- **Peel** – simulates the effect of a turning page. This effect is available in either left- or right-hand motion.
- **Lines** – uses horizontal or vertical lines to build up the image.

- **Pieces** – a series of effects which compress and expand images, or build them up from several sliding chunks.
- **Scroll** – scrolls the picture in from all corners and edges of the screen, with the additional choice of bounce or deceleration.
- **Windows** – six wipes based on rectangles.
- **Wave** – distort the images into a wavelike transition onto screen from any edge.
- **Wind** – splits the image into small rectangles and 'blows' it around the screen in four different variations.

animations with less jagged edges than normal, and with better compression than regular Anim OP5 format files. Effects can be timed in seconds or Half Frames, and can be varied in length by adjusting the program parameters.

### BACK AND FORWARDS

But it doesn't stop there. One of the nicer features of *Adorage* is its ability to tag onto the last animation sequence and seamlessly attach a new one. This is where the 'In/Out' gadgets come into their own, making it easy to reverse the motion of an effect. This facilitates transitions such as 'fly in' or 'explode out', which can produce some very nice sequences. Complicated presentations can then be accomplished by chaining several sequences together.





Adding a page-turning effect to your logo is no problem with *Adorage*

# All the rage

This flexibility also allows the selective deletion of separate sections of the animation and the possibility of changing the playback speed of individual elements within a sequence – something which is not possible with, say, *Deluxe Paint*.

An image can be clipped and only the selected part affected, with the added ability to move the effect centre to a new screen position. And each time a new sequence is added the last parameters can be re-used, or new ones defined if required. This repetition is very useful where the same effects are used on a number of images and saves a lot of setting-up time.

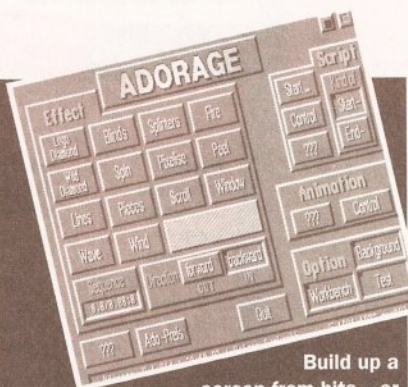
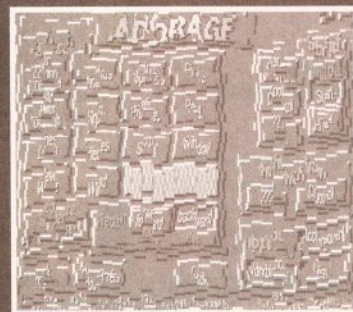
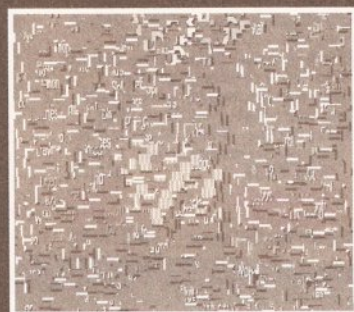
## STICK TO THE SCRIPTS

Another useful feature of *Adorage* is its script function – which saves only

scripts together can produce a complicated animation sequence many megabytes long from files which might otherwise take up less than 500K, including images.

Scripts are also quite flexible, since they can be modified after loading to manipulate images other than the ones they were designed to control. So it might well be possible to build a bank of 'custom effects'

**The *Adorage* package promises smooth animations and spectacular special effects. Gary Whiteley prepares to be amazed**



Build up a screen from bits – or reverse the order to make an explosion!

the details of one effects sequence, each containing up to two effects. This doesn't sound very exciting, but for storage purposes it can be a

**"only a script is stored, rather than a fully-rendered animation"**

huge space saver, since only a script is stored, rather than a fully-rendered animation. Of course, the animation has to be re-rendered after loading the script, so time could be a factor, but – as ever – preparation is the key. Chaining several individual

which can be called on as required, modifying the image to fit the need.

## LACK OF VARIETY

While there's no doubting that *Adorage* can perform some clever tricks and is generally fast, smooth, stable and easy to use, it's a shame that the images it uses have to be limited to interlaced, non-HAM, IFFs. A shame because this places restrictions on output quality and limits the applications of the program – even including HAM would have

## SHOPPING LIST

*Adorage* ..... £79.99  
by ProDAD/HS&Y

Distributed in UK by:  
Micro-PACE UK Ltd, Unit 10,  
Perth Trading Estate,  
Perth Ave,  
Slough, SL1 4XX  
☎ 0753 551 888

## SYSTEM REQUIREMENTS

*Adorage* will run on any Amiga with at least 1Mb of RAM and a hard disk. 3Mb ram (or more) and an accelerator are recommended. A genlock will also be required for superimposing graphics over video.

been handy. Hopefully a later version will have HAM-8 support.

Although there is quite a bit of flexibility to *Adorage* I found some of the effects to be a bit samey, but the animation building and script functions are very helpful. A little more variety would be nice, possibly in the form of a few user-customisable effects.

## CHECKOUT ADORAGE

### Documentation ●●●○○

Slim and adequate, if sometimes oddly worded and presented, which reflects its German origins.

### Features ●●●●○

Repetitive effects but flexible on the manipulation side.

### Ease of use ●●●●○

Very easy to use.

### Speed ●●●●●

The processing and replay of SSA animations is probably the fastest and smoothest achieved on the Amiga.

### Price Value ●●●●○

Perhaps a little high.

### Overall rating ●●●●○

Obviously of limited appeal – video and animation users looking for new effects should check it out if they don't mind interlaced, non-HAM, non-AGA images.



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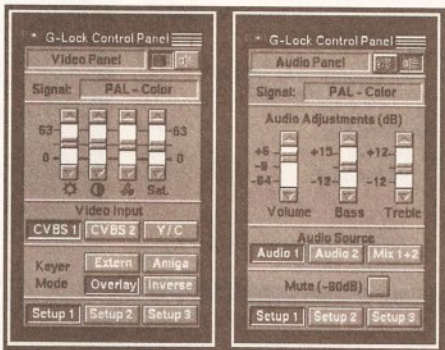
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**W**ith Y/C, composite video, audio connections and software capabilities including AGA graphics and ARexx support, GVP's new *G-Lock* would appear to be priced as the ideal tool for videomakers needing a good quality, well-specified genlock. Let's take a look and see if this is true.



The basic *G-Lock* control panels, used for adjusting the parameters of the video and audio signals

### GETTING STARTED

*G-Lock* has an RGB connector at each end, two composite video inputs, two audio inputs, one (mono) audio and one composite video output and Y/C video in and out. It has no knobs or buttons. CVBS and Y/C inputs should not be connected at the same time, though all the outputs can be used at once.

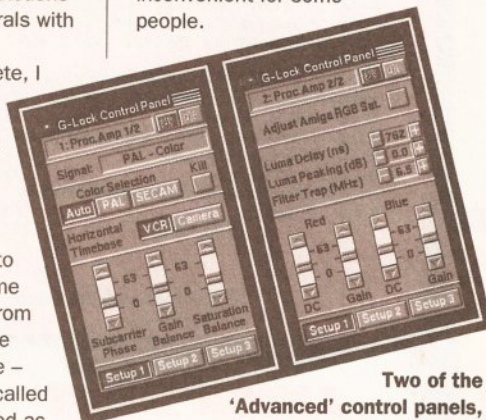
Connection is straightforward – RGB from the Amiga, RGB to the Amiga monitor, video and audio in, video and audio out and a flying cable to the joystick port. The *G-Lock* takes all its power from the Amiga and has no option for an external PSU, which could place restrictions on the use of other peripherals with A500/A600 machines.

Couplings complete, I booted up, fully expecting to see a genlocked image over video. No way José! The *G-Lock* isn't your average genlock – it requires a little extra to get it going. So it's time to run the software. From floppy or hard drive the procedure is the same – activate the program called *GL* and then be amazed as

nothing happens other than a requester asking you to reboot or cancel. That's right – it's necessary to reboot the Amiga before *G-Lock* will run, something which may become a major irritant to the average Amiga videographer without a hard drive.

At last, we're ready to roll. Well no, not quite. One final reload of the *GL* software and up pops a control panel. Clicking on the appropriate

source button locks in the video and finally we can start work. Even if the genlock isn't being used for video work a video signal should still be supplied, since the output quality using the *G-Lock*'s internal sync is rather poor. Again, this might prove inconvenient for some people.



Two of the 'Advanced' control panels, where more serious tweaks can be made to the video signal

### TAKING CONTROL

If the host Amiga has an AGA chip set or ECS Denise then six different control panels are available, if not there are only five. The basic two – which are the default panels – control video and audio respectively. As you can see from the illustration, the video panel has sliders to adjust brightness, contrast, colour and saturation, as well as buttons for determining which output mix is sent to the video recorder (from Amiga,

external, overlay or inverse) and which video input (from CVBS 1, CVBS 2 and Y/C) to select. The audio panel is simpler, with volume, treble and bass controls. In addition, both panels carry buttons which can quickly change the setup parameters by loading Preset values from disk.

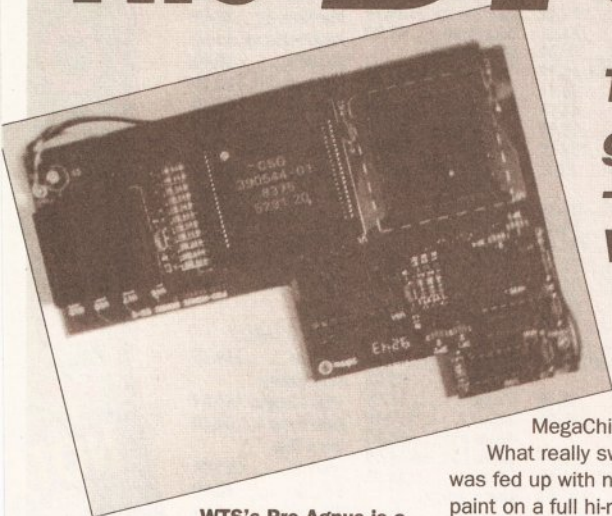
However, you can't make real-time control adjustments while genlocking as the control panel has to be on-screen – not an attractive prospect during a video edit.

The remaining control panels are the 'Advanced' ones. The first two are for adjusting some of the more esoteric values of the video signal via the Processing Amp built into *G-Lock*. Small tweaks can be made here in an attempt to get the best out of your video signal.

The fourth advanced menu is probably the most important for AGA/ECS owners, as it lets you determine either the bitplane, or the actual colour which is used to key the video through. Contrary to what the manual implies, *G-Lock* does not 'chroma key'. Instead it keys graphics over a selected colour, rather than video over selected graphics colours.

With no hardware controls, all attempts at special effects have to be done using ARexx commands. So, you could use *G-Lock* as an automatic colour splitter for digitisers which have ARexx ports, or to fade to black on one composite video source

# The BIG picture



**The WTS Pro Agnus card gives you 2Mb of Chip RAM – for under £150. Gary Whiteley puts it to the test**

made and, at £139, around £60 cheaper than the main

MegaChip competition.

What really swung me was that I was fed up with not being able to paint on a full hi-res screen with my OpalVision card. Plus, multitasking with *DPaint* was eating up a little too much vital graphics memory for my liking. So, I plumped for the WTS.

Opening the box, I was initially startled to find that three trailing wires were soldered to the small green circuit board which held the 2Mb Super Agnus and an extra megabyte of Chip memory. I was startled because these wires aren't

shown or mentioned in the adverts, and neither is the need for a little soldering. Still, nothing ventured, as they say...

### MAJOR SURGERY

The method of installation for an Amiga 2000 (or 1500) first involves taking the cover off the computer, removing the power supply, and any cards or other additions which may impede installing the Pro Agnus card. Then the first nasty part: pulling the 1Mb Agnus chip from its socket on the Amiga's motherboard. Now, I've heard a few horror stories about damage occurring at this stage, (sockets being cracked and such like) and I was extremely cautious as

I contemplated this part of the proceedings. To avoid any damage from static electricity I wore an earthing wristband attached to a central heating pipe. I also wrapped a large elastic band tightly around the outside of the square Agnus socket in the hope that it would add a little extra strength to the fragile-looking plastic item from which I was about to prise the original Agnus.

Heart pumping wildly, I took a small jeweller's screwdriver and very carefully started levering the chip from its socket – a little at a time on opposite corners while trying to hold the socket together. I used a screwdriver because a chip-puller isn't provided with the card, though I gather that they aren't always that handy in any case. After about two minutes of gentle coaxing the Agnus popped out and I'm glad to report that no untoward damage had occurred. The next thing to do was plug the new circuit card into the empty socket – probably the easiest part of the whole process.

While I had been removing the Agnus my soldering iron had been warming up. The three trailing leads had to be connected to the legs of a couple of chips, including the 68000 CPU. Now, this worried me a bit. I

**WTS's Pro Agnus is a plug-in card which can bring the Chip RAM of Amiga 500, 1500 and 2000 models up to a mighty 2Mb**

I had been contemplating upgrading my Amiga 2000 to 2Mb of Chip RAM for some time, and had almost succumbed to buying a DKB MegaChip. But then I saw WTS's advert in *Amiga Shopper* for its 2Mb Pro Agnus upgrade card – British



and then fade up to the other. However, it doesn't appear to be possible to cross-fade between video and graphics, which is quite an important omission on a unit of this cost. Mind you, the extensive use of hot-keys makes flipping between different genlock modes and screens quite easy, as long as you keep track of where you are.

### PICTURE PROBLEMS

Genlocking over composite video produced quite smeary colours, especially with the stronger reds and blues – which invariably cause trouble anyway – though Y/C naturally fared somewhat better. A worse problem is that *G-Lock* can't handle fast tape searching and drops the signal completely – a situation which won't enamour it to those who use just one monitor for viewing both their source video and graphics.

I also had a lot of problems using *G-Lock* with a GVP-accelerated Amiga 2000. The manual claims that this is due to a shortcoming of AmigaDOS 2.0 when rebooting accelerated machines, but surely GVP could have at least got its own act together here!

My other major gripe was that *G-Lock* refuses to work with an OpalVision-equipped Amiga (only the complete removal of the Opal hardware can overcome this). Now this probably isn't GVP's fault, but it's worth knowing about. **AS**

## SHOPPING LIST

**G-Lock**..... £349  
By GVP

**Distributed in the UK by:**

Silica Systems,  
1-4 The Mews,  
Hatherley Road,  
Sidcup,  
Kent,  
DA14 4DX  
☎ 081 309 1111

## CHECKOUT G-Lock

**Documentation** ●●●●○  
Good and generally informative.

Suitable up to semi-pro use, at best.

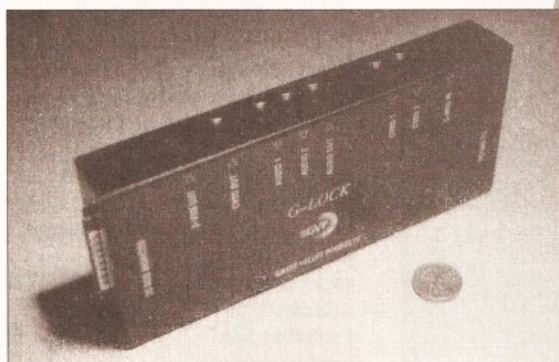
**Features** ●●●●○  
Scores well for inputs/outputs and software controls for video, but poorly for lack of graphics mixing control beyond key on/off and inverse.

**Price Value** ●●●●○  
A little expensive, considering its lack of external controls, Amiga/video fading and unprofessional Phono connectors, but still well-priced for a Y/C genlock.

**Quality** ●●●●○  
Reasonably good overall quality, so long as the input video signal is up to scratch.

**Overall rating** ●●●●○  
Not a particularly outstanding genlock, but certainly not the worst I've seen either.

# Box of tricks



*A consumer genlock is the latest addition to GVP's highly-respected product range. Gary Whiteley takes a peek at the G-Lock*

mean, soldering inside the machine you make your living from isn't a pleasant thought. Still, it was too late to chicken out. Then I remembered that I had one of those spring loaded clips, as used in test probes, lying around somewhere. So I found it and fixed it to the wire assigned for the CPU connection. Then, after verifying the naming convention for chip legs, I took a Chinagraph pencil (a soft wax pencil used for marking film) and counted around the 68000 chip until I found pin 48. The flimsy instruction sheet could make finding it a little clearer, though it's not too hard if you have access to some basic electronics handbooks.

So, instead of soldering onto the CPU, I clipped the wire on. The other two wires needed connecting to a chip toward the rear of the Amiga. I had no more spare clips, so here I carefully soldered a couple of short wire tags to the designated pins, taking care not to linger too long with the soldering iron lest I cooked either the chip or motherboard. I then soldered the remaining wires into place.

Actually, all went well and I soon had the Amiga reassembled and rigged up ready to go. Anticipating

success, I booted up. All looked fine. I had two megabytes of Chip RAM and all its attendant advantages – no more running out of display memory, faster anim playback, smoother scrolling displays, larger brush pickups and bigger screen sizes. I was happy.

### TRIPLE TROUBLE

But only for a while. An intermittent fault appeared which caused small lines to appear randomly on any graphics screens, spoiling any work I was doing. I got a replacement – but it crashed consistently in hi-res mode as a result of the extra Chip memory being wrongly assembled. A third replacement wouldn't work at all.

Finally WTS fitted yet another Pro Agnus on its premises and I'm glad to say that this time all worked correctly. Perhaps I was really unlucky, as the folks at WTS said that they had never experienced problems like this before.

WTS has since implemented a policy of fitting the units for free (excluding postage costs), so, considering the delicate nature of the operation, I would strongly advise you to take advantage of the offer if you don't mind losing your Amiga for a few days.

### A WORD OF CAUTION

There's no doubting the advantages that Pro Agnus brings, but there is a consideration you should bear in mind before parting with your cash. It is known that Pro Agnus won't work alongside either Commodore 2630 cards or KCS A500 trapdoor expansions.

There may well be other configurations that will cause problems, so before buying it's probably best to check with WTS first, and obtain written confirmation, that Pro Agnus is compatible with your particular system.

Two megabytes of Chip RAM are a boon to the serious videographer, so I imagine lots of you are contemplating this expansion. All I would advise is: get WTS to fit it!

## SHOPPING LIST

**Pro Agnus 2Mb**..... £139

From: WTS Electronics,  
Chaul End Lane,  
Luton,  
Beds LU4 8EZ  
☎ 0582 491949

## CHECKOUT Pro Agnus

**Documentation** ●●●●○  
To the point, and usable, but more graphic instruction on counting the chip pins would be helpful.

**Installation** ●●●●○  
If you're happy doing your own fitting then it's not such a difficult job – if you have the right tools and temperament. Otherwise it's wiser to have it done for you, especially now that WTS will do it for free. The provision of spring clips instead of having to solder would help considerably.

**Compatibility** ●●●●●  
I had no trouble with any of the software I regularly use – but I don't play games so I can't comment on problems which might occur there. Pro Agnus is transparent to the system, so it's there every time you boot up.

**Price Value** ●●●●●  
The price is very competitive.

**Overall rating** ●●●●○  
Assuming you don't have any of the trouble I did, then I would say that the WTS Pro Agnus represents good value. It can be fitted to the A500, A1500 and A2000 Amigas.



I'd like to start this month by quashing once and for all some unusual rumours about AMOS which have been floating around various bulletin boards over the past month or so. These rumours, spread by certain persons who shall remain nameless, claim that *AMOS Professional* has some serious bugs in it, a claim which anyone who has used the package will know is quite simply not true.

One example of such a rumour came from a user on the bulletin board '01 For Amiga'. He claimed that the serial extension in *AMOS Professional* had so many bugs that it didn't even work properly. OK, the serial extension has had its problems in the past, but Richard Vanner at Europress has assured me that it's now working perfectly.

have now been removed. And even if further bugs do rear their ugly heads, the chances of most users ever encountering them is minimal. I've been pushing *AMOS Pro* to its absolute limits for months now, and I can safely say that I've never even seen 99% of the bugs that the update removes!

### DON'T PANIC

The moral of this story is a simple one – if you think that you have found a bug in *AMOS*, don't scream your head off about it. This serves only to scare other potential *AMOS* users who – if they suddenly decide that perhaps *AMOS* isn't worth buying after all – will be robbed of the rare computing experience that is *AMOS* programming. Instead, check thoroughly that the 'bug' you have found is actually what you think it is

all the details on paper and post it to Richard Vanner at Europress Software. If the bug hasn't already been addressed, he can pass on the

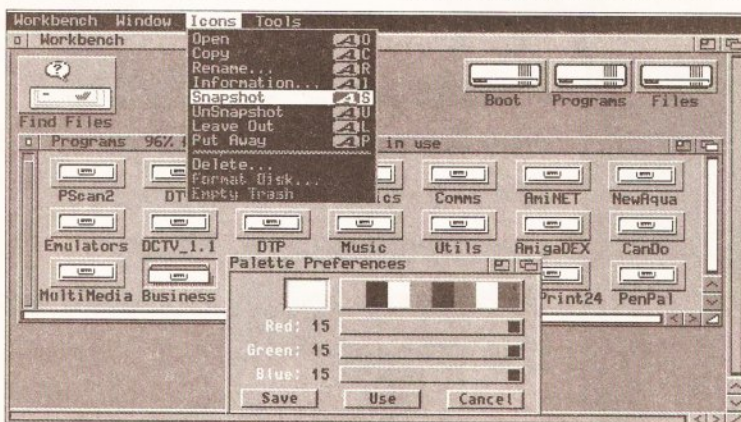
Many would-be applications programmers have criticised *AMOS* for its lack of Intuition support, correctly pointing out that serious

applications must run under Intuition for them to be acceptable as commercial products. Although *AMOS Pro* will multitask, its hardware-based screen handling unfortunately doesn't support Intuition's multiple screens option, which allows several screens to be opened and arranged from the Workbench.

When Europress finally launches the extension, it will make *AMOS Pro* a very attractive proposition for applications programming, thanks to its powerful 'Interface' language. This allows complex user interfaces to be created and managed under interrupt (look out for a comprehensive tutorial on *AMOS Pro*'s Interface language coming up next month!).

Europress would like to stress that the extension is still in the very early stages of development, so don't expect to see it on sale for a couple of months yet. Rest assured that as soon as it is released, I will

be bringing you a full review within these pages.



*AMOS* has been criticised for its lack of support for Intuition, but all this could change with the forthcoming release of an Intuition extension

Certainly in my (extensive) experience of using the serial extension, I've never discovered anything amiss.

Apparently, there has only ever been one real problem with the serial extension, and this was on the original update disk when the serial extension was first launched. Even then, this wasn't a problem with the extension itself, but with the version of the Workbench 'serial.device' driver included on the disk.

(you'd be surprised how many people think they've found a 'bug' that in fact turns out to be a documented feature of *AMOS*). If you're still sure that you've found something that shouldn't be there, then write down

If you're an *AMOS Pro* user, you should waste no time in getting hold of the *AMOS Pro* update disk

details to Francois Lionet, who can correct the bug for the next release of *AMOS*. At the end of the day, we will all end up with a better product!

### PRO GOES INTUITION

Many users – including myself – have been crying out for Intuition support within *AMOS* for years now. At last, it seems that Europress has finally bowed to public pressure with the news that work has started on an extension that will allow *AMOS Pro* users to code applications that take full advantage of the Amiga's windowing environment.

**"Many users... have been crying out for Intuition support... for years now"**

# AMOS ANSWERS

**Having trouble with AMOS? Are your interface routines not responding? Is your soundtrack silent? Are your bobs refusing to budge? Whatever the problem, Jason Holborn is here to sort it out**

**"In many ways, AMOS Professional is quite exceptional"**

In many ways, *AMOS Professional* is quite exceptional – considering its sheer size and complexity, the amount of bugs that the latest update disk removes (more on this later) is minuscule. I'm not trying to say that this update nails every bug, but I'm sure most

### BOULDER BASH

I am writing an 'Asteroids' style game on my Amiga 500 using *Easy AMOS*. It is being written for my GCSE Computer Studies project. I am a bit stuck, so can you please help! Could you possibly give me a couple of routines that will handle the following:

a) Screen wrap-around. When the ship disappears off one side of

the screen, I want it to reappear on the opposite side.

b) Acceleration. When the player pushes the joystick in a particular direction, the ship starts to slowly accelerate.

c) Bob movement. How do I make the ship move in the direction that it is currently pointing?

Rhydian Lewis  
Dursley, Glos

Well Rhydian, I'm afraid I don't really have the space to publish complete listings of the routines that you need, and, since it's for your GCSE, you should be probably writing the code yourself anyway! However, I can give you some general guidelines that should put you on the right lines.

Let's start with the screen wrap-around routine. This is actually very easy indeed to do. All you need to do



## AMOS PRO UPDATED

Also no doubt in response to your calls and letters, Europress has released the first of many update disks for *AMOS Pro*. As well as the usual bug fixes, the update adds a couple of very useful features to *AMOS Professional*. Although Europress admits

that this is still quite a minimal update (support for the new AGA chip set screen modes won't be implemented until the next one), the enhancements that the update offers are well worth having. You can obtain the update from any good PD supplier. Here's a quick run-down of all that's on offer:

● **1200 Compatibility.** Many users encountered problems running *AMOS Pro* from the Workbench on an Amiga A1200. Although *AMOS Pro* loaded fine when booted from its own disk, *AMOS Pro* has now been fixed so that it will run from Workbench without problems, therefore making the package usable on a hard disk-based system.

● **AMOS Pro file selector.** The *AMOS Pro* file selector was considerably better than the original, but Europress has enhanced it still further with the addition of a couple of extra features. For starters, the file requester now fully multitasks, so you can happily type in a filename whilst the requester is scanning the directory of a disk.

The 'Store' slider has been enhanced too. No longer does it

simply display a random selection of directories. Now, when you click on the 'Store' gadget, you get a far more helpful list of the directories currently stored. You can then select the one that you'd like to view, simply by clicking on its entry. The *AMOS* right mouse button trick has

been restored too – when you click the right mouse button, *AMOS Pro* will display a device list. Click again and you'll get an 'Assign' list. Click a third time and you'll be transported right back to the original directory listing.

The way filenames are entered into the file requester has also been tidied up considerably. Instead of having to split the full filename down into a separate path and filename, you can enter the full filename complete with path information and *AMOS Pro* will automatically split the string down into the appropriate path and filename strings. Another useful extra is the addition of a very helpful 'file finder' facility. This marks any files within the current directory that fit a given wildcard combination.

● **Improved text reader.** If you'd like to add a hypertext-based help system to your own programs, you can do so with the new, improved text reader program. This can now handle text files containing hypertext information (see the section on *AMOS Pro*'s Interface Hypertext facilities for more details), therefore making your help files much more, well, helpful!

● **Turbo-charged testing.** The *AMOS Pro* 'Test Program' facility has been

totally recoded to make it considerably leaner and meaner. According to *AMOS* programmer Francois Lionet, the new 'test' function runs between 30 to 40% faster on a 68000-based Amiga.

And, as you might expect, on an accelerated Amiga, the overall speed is even more impressive. Although you won't notice a great deal of difference on smaller programs, the speed increase will be more than evident on larger projects.

## ● Configurable default screen.

Bored of the red lowres screen? You'd prefer Workbench grey, Hires interlaced and overscanned? No problem – just set it to your heart's desire using the new options in the *Interpreter\_Config.AMOS* program.

● **Improved monitor.** Debugging a program that continuously calls the same procedure can be very, very boring especially if you

**"the new 'test' function runs between 30 to 40% faster"**

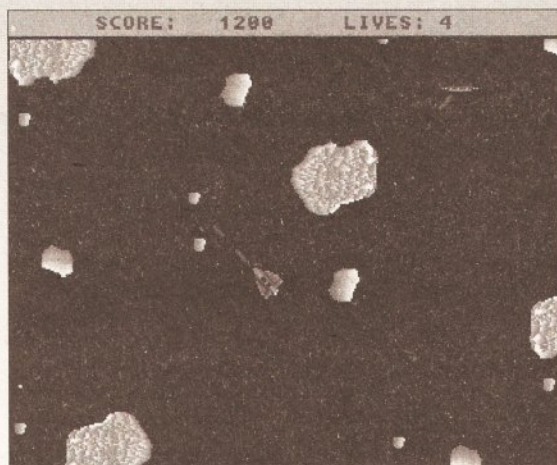
# AMOS action

**Jason Holborn brings you all the news on the latest AMOS developments, including the very first AMOS Pro update disk**

is keep track of the X and Y co-ordinates of the player's ship. When either co-ordinate reaches a maximum or minimum level, then it is reset to the opposite figure.

Say, for example, the ship moved off the screen to the right. The co-ordinate would therefore be greater than 320 (the width of a low resolution screen). When this happens, you would reset this co-ordinate to 0. To make this look more convincing, it's probably a good idea to open a screen larger than the current viewmode will allow and then limit the display to 320 by 256 (for a PAL system) using the 'Screen Display' command.

Next we have your acceleration routine. This is pretty simple too. You just need a variable that defines the speed of the player's ship. When the ship first starts moving in a particular direction, set the speed variable to 1. If the player then continues to push



**Screen wrap-around, acceleration and bobs: the three vital ingredients of the classic Asteroids game**

the joystick in that direction, increase the speed variable by 1 until you reach a maximum speed of, say, 5. This speed variable would then be

used to dictate how many pixels the bob moves during every frame. It really couldn't be easier.

Finally, bob movement. Once again, the best way of handling this is to have a variable that keeps track of the direction that the ship is pointing in. I'd advise you to limit the number of directions to a maximum of eight – north, south, south-

east, north-east, north-west, and so on. You can then use the value held within this variable to calculate which direction the ship should move in. I hope this helps!

are sure that the procedure in question works fine. To make the process of debugging such programs considerably faster, the *AMOS Pro* Monitor will no longer single step through a closed procedure. Instead, it will perform the closed procedure at full speed and then return to single step mode when the procedure call returns you to the main program. This feature is particularly useful as it allows you to isolate sections of code for debugging. If you only want to debug a particular procedure, you could 'close' all other procedures so that the Monitor will ignore them.

## YOUR PAGE NEEDS YOU!

By the time you read this, the first few entries for my 'Your Page Needs You' competition should have started to arrive and I hope to print the best 'Star Field' and 'Infinite Bob' routines in next month's issue. Keep those entries coming and look out for more coding problems next month!

continued on page 64



# GAMES PROGRAMMING

## PARALLAX SCROLLING

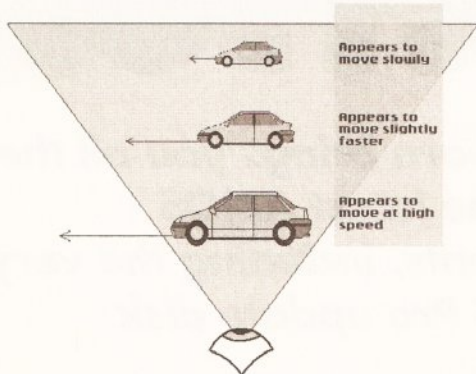
Early last year we took a pretty in-depth look at the art of scrolling screens and their use in arcade games such as the classic *Defender*. As you may or may not remember, the 'dummy' game that we based all this theory on had just a single screen that scrolled at a rate of 4 pixels per second in either

different speeds. This technique is called 'Parallax scrolling'.

Parallax scrolling is a very simple, yet very effective, scrolling technique that attempts to emulate the way we see moving objects in the real world. As your physics teacher no doubt tried to drum into you back in your school days, objects that are

moving at the same speed will appear to move past us at different rates depending upon how far away we are from them. If an object is close to us, then it will appear to move past us at high speed. If, on the other hand, the same object was to move past us at a greater distance, it would appear to move slowly. To paraphrase Einstein, it's all relative.

### The 'Parallax' Effect



Even if they are moving at the same speed, objects will appear to move past us at different rates depending upon the viewing distance

direction. If you managed to get the code up and running for yourself, then I'm sure you'll agree that the results looked highly impressive. While our spaceship stayed in the centre of the screen, the background graphics scrolled past smoothly under the expert control of the Amiga's hardware scrolling facility.

However, times change and these days this sort of scrolling backdrop is decidedly old hat. If you're the proud owner of a game like *StarRay* or even Dave Jones' rather aged (but still brilliant) hit *Menace*, then you may have noticed that the scrolling employed by these games gives a far greater illusion of depth. This is achieved by scrolling certain sections of the screen at

## AMOS ANSWERS (continued)

continued from page 63

### CHEAT BUSTER

I am nearing completion of a board game to which I would like add the ability to load and save the current positions, so that players can continue playing over a period of time. At the moment I am using a simple sequential file to save the contents of the different arrays and variables, but the only problem with this solution is that it makes the file easy to edit if the player should wish to cheat.

Can you think of another method that would make the file unreadable to unauthorised users?

Jim Campey  
Brentford, Middlesex

I think the best way to tackle this problem would be to use some form of encryption. This could be handled by a procedure which is called each time a variable needed encoding. The encryption method is up to you. You could, for example, convert all characters to ASCII values and then add a given value to them. For numbers, why not convert them to characters? You'll obviously need to

keep very careful control over the file format, but encryption will do the job.

### BACK TO BASICS

I do not yet own an Amiga, but I have read your magazine since the very first issue and very much enjoy it, especially the AMOS pages.

My problem is that even though your AMOS column has taught me everything I know about AMOS, I'd

## HELP! I NEED A HOLBORN

Each month our AMOS genius in residence (yes, that's you, Jason - Ed.) answers your AMOS-related problems within these very pages. So if there's any aspect of AMOS that is troubling you, no matter how large or small, get your letters off to Jason Holborn, *Amiga Shopper*, Future Publishing Ltd, 30 Monmouth Street, Bath, Avon BA1 2NA.

## LISTING 1 • LISTING 1 • LISTING 1

```
' *** Parallax Scrolling Demo 1
' *** Using three Screens
```

```
' *** Set up Amal instructions
```

```
A$=" Let X = 0: Let R1 = 0 "
A$=A$+"A: Let R1 = R1+1 "
A$=A$+" If R1 < 320 Jump B "
A$=A$+" Let R1 = 0 "
A$=A$+"B: Pause ; Let X = R1 "
A$=A$+" Jump A "
```

```
B$=" Let X = 0: Let R1 = 0 "
B$=B$+"C: Let R1 = R1+2 "
B$=B$+" If R1 < 320 Jump D "
B$=B$+" Let R1 = 0 "
B$=B$+"D: Pause ; Let X = R1 "
B$=B$+" Jump C "
```

```
' *** Main Program
```

```
Screen Open 0,640,190,32,Lowres
Flash Off : Curs Off
Screen Display 0,128,50,320,240
Load If "SOURCE:BACK.IFF"
```

```
Screen Open 1,640,40,16,Lowres
Flash Off : Curs Off
Screen Display 1,128,237,320,
Load If "SOURCE:MID.IFF"
Screen Copy 1,0,0,320,40 To 1,320,0
```

```
Screen Open 2,640,20,16,Lowres
Flash Off : Curs Off
Screen Display 2,128,274,320,
Load If "SOURCE:FORE.IFF"
Screen Copy 2,0,0,320,20 To 2,320,0
```

```
Channel 0 To Screen Offset 1
Channel 1 To Screen Offset 2
Amal 0,A$: : Amal 1,B$
Amal On
```

```
Wait Key
```



# SCROLL FACTOR

We can emulate this natural phenomenon within games programs by scrolling sections of the screen at different speeds – a technique that has been used to great effect within many high speed arcade games. In AMOS we're quite spoilt for choice, as this language allows us to achieve pretty much the same effect using a variety of different techniques.

Possibly the easiest method of getting a parallax scrolling effect is to use the AMOS hardware scrolling facility. But, as any experienced

AMOS programmer will know, hardware scrolling is restricted to scrolling whole screens only. This is best demonstrated by the 'dummy' shoot 'em up game that we concentrated on last time around. So, how do we achieve a parallax effect using hardware scrolling? Well, the solution is to split the viewing area into several individual screens, each of which can be scrolled independently of the other.

# FIELDS OF VIEW

Starting from the top of the screen, we would open a large bitmap that contained the background graphics in the far distance (stars, planets, and so on). Then below this we could open up another screen that contained another set of background graphics. This time, though, the

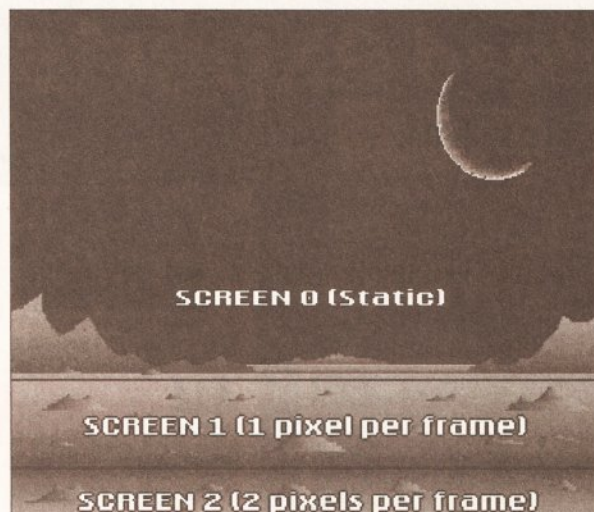
like to learn even more so that when I do finally buy an Amiga and AMOS, I will be able to get stuck in straight away. Can you therefore please tell me where I could buy the AMOS manual and any other books that will help me?

P Law  
Chesterfield, Derbyshire

Without wanting to sound immodest, by far the best way to get hold of AMOS and its associated paraphernalia is through the mail order pages of *Amiga Shopper* and our sister magazine *Amiga Format*. Turn to page 89 to find out more!

As for books, the only two AMOS-related tomes that I've seen are *Mastering Amiga AMOS* from BSB (see the review in last month's issue!) and the brilliant *Amiga Game Maker's Manual* from Sigma Publishing. Both should be available from your local bookstore.

graphics would scroll at a slow rate (1 pixel per frame, for example). Next, we need another screen containing the foreground graphics (those closest to us). Once again, this screen would also scroll, but at a slightly faster rate (2 pixels per



**A quick and easy method of producing a parallax effect: scrolling three or more separate screens at different rates under AMAL**

frame). If you then combine these three screens and scrolled the last two, a primitive sort of parallax effect could be achieved.

However, there are two problems with this approach. Because we're using three separate screens, a visible line can be seen between each. It's therefore a good idea to restrict the colours used at the top and bottom of each of these screens to darker shades that blend in with the black dividing line that the Amiga produces. Secondly, any bobs that you use are restricted to a single screen, so it's a good idea to make sure that the main play area (or areas) are big enough to distract the player's attention from this otherwise rather serious limitation.

As an example of this parallax effect in action, have a go at the straightforward example program shown in Listing 1. As you can see from the start of the program, the process of scrolling the last two screens is handled by Amal, therefore leaving AMOS to get on with the more important task of running your game. The program requires three IFF picture files to work – One 32-colour backdrop image (stars and planets and such) and two 16-colour images for the screens that are scrolled.

# IT'S PLAYTIME

Potentially the most powerful method of producing a parallax scrolling effect is the 'Dual Playfield' command. This enables you to overlay one screen on top of another to create a dual playfield display. What's more, the background colour

of the screen in front is 'masked out', allowing the graphics displayed on the second screen to show through the gaps.

This may sound like just what we need, but the bad news is that dual playfield displays also have their limitations. One is the number of colours that each screen can use. Because you're effectively combining two screens into one, the Amiga's hardware only allows a maximum of sixteen colours to be displayed on each in low resolution (this drops down to eight in medium and high resolution screen modes). What's more, both screens must be of exactly the same resolution. You cannot, therefore, have a medium resolution screen displayed on top of a low resolution screen.

However, because we're effectively working with two independent screens, the two screens that you use don't have to be the same size. You could, for example, have one that is 320 pixels wide and another that is 640 pixels wide. As long as both are opened in 'LOWRES' or 'HIRES' mode, AMOS is kept happy.

Problems do occur when scrolling a dual playfield display though, especially when using the 'Screen Offset' command. Even opening a dual playfield display can produce weird effects, so don't think that you've done something wrong if your dual playfield display produces weird results. Listing 2 demonstrates how easy this function is to use, so give it a try and see! **AS**

# LISTING 2 • LISTING 2 • LISTING 2

```

' *** Parallax Demo 1
' *** Uses Dual Playfield Mode

Screen Open 0,640,70,4,Lowres
Screen Open 1,640,70,4,Lowres
Screen Display 0,128,150,320,70
Screen Display 1,128,150,320,70

Wait Vbl
Dual Playfield 0,1

' *** Load in 2x 320 by 70 2-colour bitmaps
' *** and then copy them into the second half
' *** of the screen.

'Screen 0 : Load Iff "SOURCE:FORE.IFF"
Screen Copy 0,0,0,320,70 To 0,320,0
'Screen 1 : Load Iff "SOURCE:BACK.IFF"
Screen Copy 1,0,0,320,70 To 1,320,0

X1=0 : X2=0

Repeat
X1=X1-1 : X2=X2+1

Wait Vbl
Screen Offset 0,X1,0
Screen Offset 1,X2,0

If X1=0 Then X1=320
If X2=320 Then X2=0

Until Inkey$<>" "

Screen Close 0
Screen Close 1
    
```

# NEXT MONTH

Next month's AMOS Action section will be even more exciting than this month's (assuming that such a state of affairs is actually possible). Not only will I be bringing you a comprehensive tutorial on how to use AMOS Pro's Interface language, but you can also look forward to more of the exciting news and features that have made AMOS Action such a big favourite with AMOS users worldwide. So, I'll bid you farewell until next time, and remind you to keep on programming with AMOS – it's the tops!





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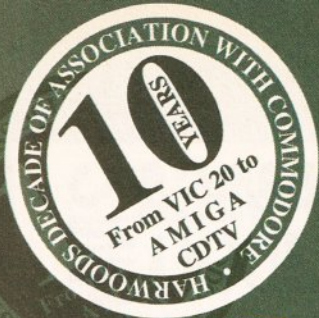
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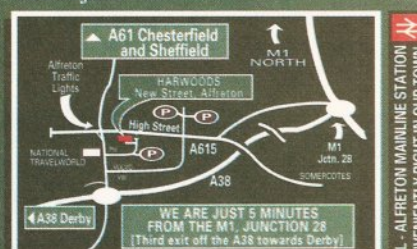
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If you're quite new to the Amiga, you may well be wondering what lies beyond the confines of the Workbench: in other words, what is this mysterious thing called 'AmigaDOS'? Workbench is central to the Amiga's function – but there's a wealth of software out in the public domain (as demonstrated by our regular 'Software for Free' feature) which is just not designed to work from Workbench.

It is possible to get limited access to such software (in Workbench 2 and higher) by selecting 'Show All' from the menu, and double-clicking the program's icon, but many programs require parameters and, unless you know what those are, you're often no better off. Mastering at least the rudiments of the Shell is of paramount importance if you are to get the most satisfaction from using your machine. Over the next couple of months, I'm therefore going right back to basics, with no apologies for any experienced AmigaDOSers who had to start at the beginning too. (They'll find a special Expert's section at the bottom of this page.)

## WHOSE COMMAND LINE IS IT ANYWAY?

AmigaDOS is based around a command line interpreter. Many computer owners will have never encountered anything quite like this before, as 'graphic interfaces' have become the accepted method of communicating with a machine. Even some programming languages are largely based around graphic displays nowadays.

However, it is often easier and faster to communicate your exact intentions by spelling out exactly what you want to do. With this power comes responsibility and, just as careless talk costs lives, a slight error in the written command can spell potential disaster.

So, before doing anything, make a copy of your working Workbench disk (the one you made when you got the machine). Keep this copy disk for

on which version of Workbench you are using. If you have Workbench 2 or higher, you might prefer to 'Leave Out' this icon and 'Snapshot' it on the main Workbench screen for convenient access.

## FIRST PRINCIPLES

The origins of the name 'Shell' are as vague as an insanity plea, but in essence it is really just an enhanced command line processor. So, the key

and assumes that it is the command. Any words after that are handled by the command program – the so-called 'arguments' you will read about. Some commands need no arguments, others require several, and more still can have optional ones. So, a short summary of command line components would look something like this:

**Command:** What to do.  
**Arguments:** What to do it with.  
**Options:** How to do it.

Given this knowledge you can consider how you might ask someone to make a cup of tea:

**>Put the kettle on.**

to which they may reply:

**>You expect ME to get into THAT!**

Certain aspects of AmigaDOS are context sensitive, or, in other words, some commands take their arguments by implication and guess what you mean. This remarkably useful facility isn't anything like as complex as it sounds, as the previous example proves. Here, the instruction **PUT (ON)** can mean either 'wear' or 'switch' – depending on the context in which it was offered. More importantly, this simple sentence demonstrates command line parsing in action.

The verb 'Put' could have been an AmigaDOS command, while 'the' is similar to an AmigaDOS keyword with the argument noun 'Kettle'. 'On' is directly analogous to an AmigaDOS command line switch. In

## JARGON BUSTING • JARGON BUSTING

**Construct** – This is a wild bit of jargon that crops up all the time, and is a contraction of the phrase: **control structure**. A control structure is anything which affects the flow of a program, and therefore include things like loops and decisions. The beginning of a control structure is called an 'opening' and the ending is a 'closure'. Therefore we can both 'open' and 'close' a construct – easy isn't it?

**DOS** – An acronym standing for 'Disk (or Device) Operating System'.

tinkering with AmigaDOS commands until you feel at home with the system and what it is capable of. Always use your original disks as masters and keep at least one set of everyday working disks. In that way, you won't accidentally damage a usable Workbench disk and end up virtually unable to use your machine.

Now place the copy of your working Workbench disk in the internal drive and reset the machine – you can do this using either the power switch or, preferably, the reset combination **Ctrl-Amiga-Amiga**. When the Workbench screen appears, open the Workbench disk and locate the icon marked 'Shell' – it could be in the main window or the drawer marked 'System', depending

question here is this: what exactly is a 'command line' – and why does it need processing?

To answer this, you have to think in fairly simple terms: computers, after all, are quite dumb animals. The Shell works with command lines – instructions. Consider what you might say to a puppy in training: "Sit!", "Fetch!" or "Not on the rug...". A command line is just a sentence and the language is AmigaDOS. The command-line processor breaks your sentence into little chunks and passes it to AmigaDOS – so punctuation is very important here.

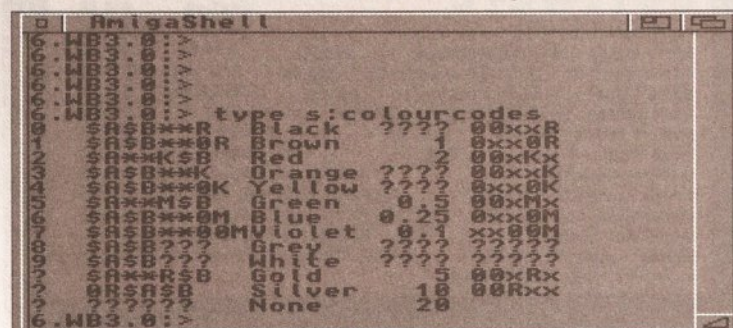
At a more technical level, what really happens is this: the Shell reads the first word of the sentence

## START HERE!

Even if electronics is not your thing, this script makes use of some obscure, but powerful, features found in AmigaDOS versions 2 and above. Not everybody knows about these, but they can be surprisingly useful. Just take a look at Step 23 and the description of what it does, and you'll see what I mean.

## ENTERING THE DATA FILE

As well as the usual script, this month you will also need to enter a special data file. Each line consists of a number, two spaces, a special string, one or more padding spaces, a colour, one or more padding spaces and the tolerance. The grid at the top is provided as a guide and need not be entered (it doesn't affect the script one bit). Incidentally, the traditional tolerance band for 20 per



If the data file isn't entered properly, then the calculated resistances won't be correct either

cent tolerance is Salmon or Pink. You may like to adapt the data file to include this if you work with old radios, TVs or other appliances.

Using 'Rescalc' is very simple: you simply enter the first few letters

of each colour code on the three bands (the value for 'tolerance' is optional) and AmigaDOS works out the resistance.

You can, of course, enter the full name of any colour – but this

requires more effort. For instance:

1>RESCALC Black Brown Red  
1K0

is the same as:

1>RESCALC Bl Br Re  
1K0

EXPERTS

If you've ever dabbled in the world of electronics, you'll know that one of the most tricky things to get to grips with is the resistor colour code. Resistors are manufactured using a set of 'preferred values', which are marked on the body of the component using coloured bands. This month's script will decode any given set of colours and return the component's value. The script is designed to handle three-band resistors, and can recognise values across the range of 0.01 Ohms to 990M, with tolerances from 0.1 to 20 per cent.



AmigaDOS jargon, this command's synopsis would read:

**PUT [THE=<Item>] [ON]**

The item could be any kitchen implement: Kettle, Dishwasher, or whatever. The command's template would look like this:

**PUT THE/K, ON/S**

Don't worry too much if none of this means much to you at this stage – you'll soon pick it up.

A lot of this series concentrates on AmigaDOS command scripts, also known as 'programs'. These may sound complicated too, but in fact a script is merely a sequence of AmigaDOS commands. Let's say you had a script called **MAKE** which was designed to make tea or coffee. Let's also assume that the command **PUT** was actually more powerful and had another option, **IN**, like this:

**PUT [THE=<Item>]  
[IN=<container>] [ON]**

and the program has the arguments:

**MAKE <DRINK> [MILK] [SUGAR]**

Now we have the following pseudo-code for the **MAKE** script. (The angle brackets "<>" show where a value will be substituted from the command line.)

**DRINK/A, MILK/S, SUGAR/S**  
**PUT the Kettle ON**  
**PUT the <DRINK> in CUP**  
**PUT the <MILK> in CUP**  
**PUT the <SUGAR> in CUP**

**PUT the <WATER> in CUP**  
**SAY "<DRINK>'s made!"**

This code is not very dissimilar from a real AmigaDOS command script. Although the commands are made up, many real scripts look just like this – provided you know what the commands do, you can read many of them just as easily.

## A PRACTICAL SESSION

Now, double-click on the 'Shell' icon – an operation usually referred to as "opening a Shell". Notice that there's an arrow at the top of the screen – this is called a prompt, and since the default prompt varies from system-to-system, I have adopted a very simple one for this series. When you are required to enter something, the prompt (it may read "1.SYS>" on your system) is shown as:

1>

It goes almost without saying that when you are typing in commands there is no need to enter this prompt as well.

To get you started, here's an AmigaDOS command you have used many times without even realising it: **LIST**. In its most basic context **LIST** is the AmigaDOS version of opening a drawer and looking at the contents inside. Enter this now:

1>**LIST**

Did you press **Return** at the end of the line? That's the big slab-like key at the right-hand side of the keyboard. If you have any model of Amiga except the A600, you can

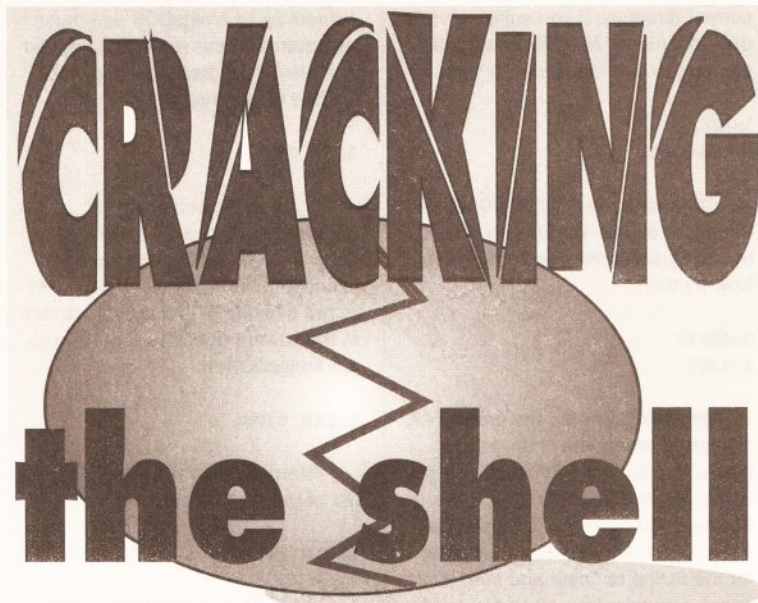
press the **Enter** key on the numeric pad instead. If everything goes according to plan your disk drive will start up and a long list of information will start rolling up the screen. Wait until the listing stops and enter the command again, like this:

1>**list**

Notice any difference? There shouldn't be any – AmigaDOS is not

'case sensitive', and does not make any distinction between capital and lower-case (small) letters.

More importantly here, AmigaDOS is being context sensitive with respect to this command. You have clearly asked it to **list** something, but have not been explicit regarding what you wanted a list of. When you first open a Shell from AmigaDOS you are at the root of a tree – the same as if you had just



**Whether you're a beginner, an expert, or somewhere in-between, there's something for you in this month's AmigaDOS column. Mark Smiddy explains**

## HOW IT WORKS

1. Defines the argument template for this script. Note that the tolerance setting is optional.

2-3. Redefine **bra** and **ket** to my favourite values.

4. Sets a default value for the tolerance band. This is optional and does not need to be entered when the script is executed.

5. Sets the global environmental variable, **OK**, to 0.

6. Locates the first colour code in the **colourcodes** file and stores the entire line in the global variable **F**. Note use of the **nonum** option to suppress line numbers. For instance, if the first colour was Brown, the variable would contain:

1 \$A\$B\*\*0R Brown 1%

7. Takes the local variable **RC** and adds it to the global **OK**. **RC** is a

private AmigaDOS process variable which can be read from but not written to: in fact, it's the return code from the last command: 0, 5, 10 or 20. The significance of this operation (which is not possible in AmigaDOS 1.3) will be seen later.

8. Locates the second colour code and stores the line in the global variable **S**.

9. See Step 7.

10. Finds the multiplier and sends that to the global **M**.

11. See Step 7.

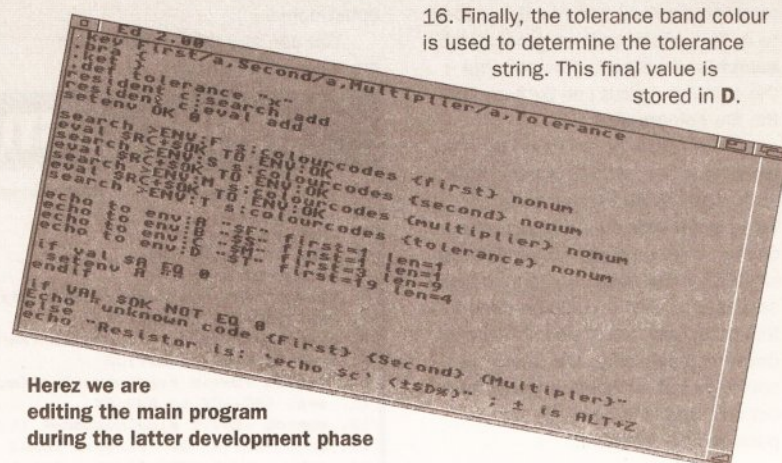
12. Finally gets the (optional) tolerance colour and stores that in the global variable **T**.

13. The first character of the line held in **F** is read and stored in **A**. This is the number represented by the first colour code. For instance, Brown=1. (Unlike Steps 9 and 11, a

repeat of Step 7 is not used here. Don't worry – the reasons for this will be explained shortly.)

multiplier. For instance if the multiplier is Yellow, the variable gets: **\$A\$B\*\*OK**.

16. Finally, the tolerance band colour is used to determine the tolerance string. This final value is stored in **D**.



Herez we are editing the main program during the latter development phase

14. The first character held in **S** is read and stored in **B**. This is the second colour band.

15. A special string is read from the line held in **M**, based on the

17. If the number held in **A** is equal to 0, control continues at Step 18, otherwise it jumps to 19.

18. **A** is reset to an empty string.

continued over the page



opened the Workbench disk. (The drawers on your Workbench disk are called 'directories' in AmigaDOS and each Workbench drawer has an AmigaDOS directory associated with it – but not the other way around.)

By entering **LIST** in this way you have listed the contents of the current directory. AmigaDOS has a command to show and change the current directory which is also context sensitive. If you give the command on its own, it returns the current directory; if you supply a valid directory name, AmigaDOS will start pointing to that directory. Try this:

```
1>CD
Workbench:
```

The name returned by **CD** will be the name of your Workbench disk – not necessarily the one shown here. Now try this:

```
1>CD C
1>LIST
```

On some systems the prompt will change to reflect the change: just ignore that for now. This time you get a long list of different names – that's because you have now entered the AmigaDOS command directory. Wait for the listing to finish and start it again, only this time press the **space bar** as the top of the list reaches the window. This pauses the listing –

press the **backspace** key to start it again. If you look carefully at the list of files you will notice **LIST** in among them. It's tricky to spot, as this listing is all mixed up – to get a sorted list, use the following instead:

```
1>DIR
```

The Workbench disk you start the machine from (also has a special name, **SYS:**. (Note the use of a colon after the name – this means something to AmigaDOS and must be entered where required.) So, you can always get back to where you started by entering this:

```
1>CD SYS:
```

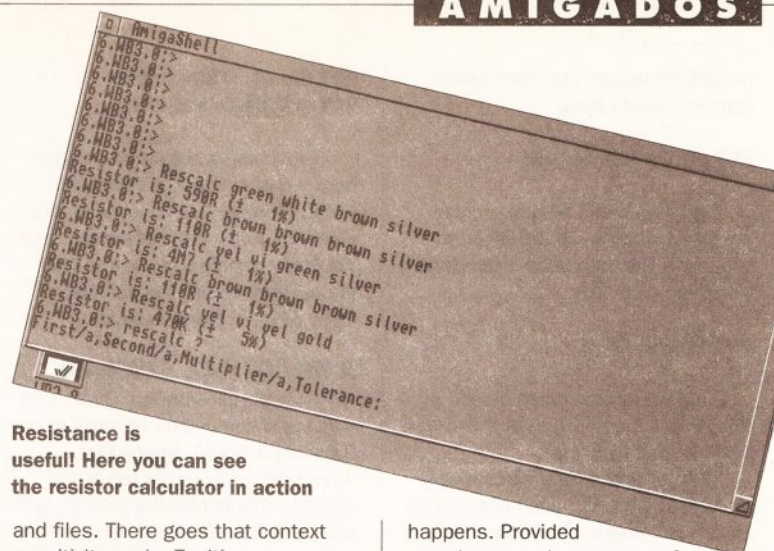
The context sensitivity of AmigaDOS commands means you often have to specify exactly what you mean. For instance, if you want to get a listing of just the directories in the current directory, you have to tell AmigaDOS to:

```
1>DIR DIRS
```

Alternatively, you could just get a list of the files by entering:

```
1>DIR FILES
```

However, entering both options is the same as entering none at all – **DIRS** and **FILES** means directories



**Resistance is useful! Here you can see the resistor calculator in action**

and files. There goes that context sensitivity again. Try it!

So how do you know which command to use and where? Well, the simple answer is that there is no better teacher than experience. However, few people could ever expect to learn every command inside out, so to avoid having to look in a manual every five minutes, AmigaDOS provides a useful *aide-memoire*. Enter this:

```
1>DIR ?
```

and, hey presto, AmigaDOS spits out all the options available for that command. At this stage you probably won't have the first idea what any of those mean, but you might like to try experimenting with them to see what

happens. Provided you always work on a copy of your working Workbench disk – nothing you do can possibly cause any harm. Alternatively, you might like to try entering and using this month's 'expert' script. To enter the script proper and its associated data file you need to type this:

```
1>ED S:RESCALC
```

eventually followed by:

```
1>ED S:Colourcodes
```

Press **Esc** and **X** to finish editing and the following to start the script:

```
1>EXECUTE S:RESCALC Brown J
Black Red AS
```

continued from the preceding page

19. Closes the **if...endif** construct opened at 17.

20. Checks if the value held in **OK** is equal to 0 and if it is, control jumps to Step 22. As promised, all can now be revealed about this variable. As you may recall, **OK** is initialised to 0 at the start of the program and in Steps 7, 9 and 11 the return code from the previous command is added to it. This return code is generated by **search** and will be 0 provided that the colour supplied can be found in the file **colourcodes**.

If the colour is not found then a **warn** condition (**RC=5**) is generated and added to **OK**. At this point the value in **OK** indicates if one or more colours were missing – thus avoiding testing for the **warn** condition in three separate places. It could be done in this other way, but it slows the script down unnecessarily. The tolerance setting is not included (it would have been at Step 13) because the parameter is optional.

21. Displays an error message to explain the colour code was not valid.

22. If control reaches here from 21, it jumps to 24, otherwise it continues at 23.

23. Of all the things I have done with AmigaDOS this has got to be among the most bizarre, so do bear with me while I explain.

This deceptively simple line actually does several jobs in one fell swoop, and eventually ends up printing out the resistor's value. The embedded **echo** statement is executed as the line is displayed because it is enclosed in reverse apostrophes (').

You can see this in action with the following example:

```
ECHO "The date is: `date`"
```

However, in our resistor calculator script, **echo** is also retrieving the value of a second variable **C**. The contents of **C** are the special string described above for the multiplier, so they might be something like **\$ASB\*\*OK**.

Now, since this string contains items which are variables in their own right, their contents are displayed instead! Two asterisk characters provide non-printing space between

the variables and the remainder of the string, which would otherwise confuse the variable parser. In other words, if **A=4** and **B=7** then:

```
ECHO $C
```

gives the desired result:

```
470K
```

24. Rounds off the script by closing the **if...else...endif** construct opened in Step 20.

## LISTING • LISTING • LISTING • LISTING • LISTING

```
1. .key First/a,Second/a,Multiplier/a,Tolerance {Multiplier}"
2. .bra {
3. .ket }
4. .def tolerance "x"
5. setenv OK 0
6. search >ENV:F s:colourcodes {first} nonum S:Colourcodes - numbers MUST be entered
7. eval $RC+$OK to ENV:OK
8. search >ENV:S s:colourcodes {second} nonum
9. eval $RC+$OK to ENV:OK
10. search >ENV:M s:colourcodes {multiplier} nonum
11. eval $RC+$OK to ENV:OK
12. search >ENV:T s:colourcodes {tolerance} nonum
13. echo >env:A "$F" first=1 len=1
14. echo >env:B "$S" first=1 len=1
15. echo >env:C "$M" first=3 len=9
16. echo >env:D "$T" first=20
17. if val $A EQ 0
18. setenv A ""
19. endif
20. if val $OK NOT EQ 0
21. echo "Unknown code: {First} {Second}
22. else
23. echo "Resistor is: `echo $c` ($D)"
24. endif

V..V.....V.....V....
0 $ASB**R Black ???%
1 $ASB**OR Brown 1%
2 $A**K$B Red 2%
3 $ASB**K Orange ???%
4 $ASB**OK Yellow ???%
5 $A**M$B Green 0.5%
6 $ASB**OM Blue 0.25%
7 $ASB**OMViolet 0.1%
8 $ASB Grey ???%
9 $ASB White ???%
? $A**R$B Gold 5%
? OR$ASB Silver 10%
? ????? None 20%
```



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Talking of files, CIX has over 50 Gigabytes of on-line storage (yes, that's 50 Gigabytes) from which you can download files. Unlike most bulletin board systems, there are no restrictions on the number of downloads you can make. Many files appear on CIX before anywhere else (by virtue of the authors being CIX users) and are sometimes exclusive to the system.

If you read my article in *Amiga Shopper* issue 22 (and if not then where were you?), you will know that CIX also now has a full Internet gateway, which you can make use of for no extra charge. This gives you access to the hundreds of thousands of sites around the world that are connected to the Internet.

And, to top it all, you can send a fax from CIX just as easily as sending a mail message. I have used this facility on many occasions, and very useful it is too.

## TALK IS CHEAP

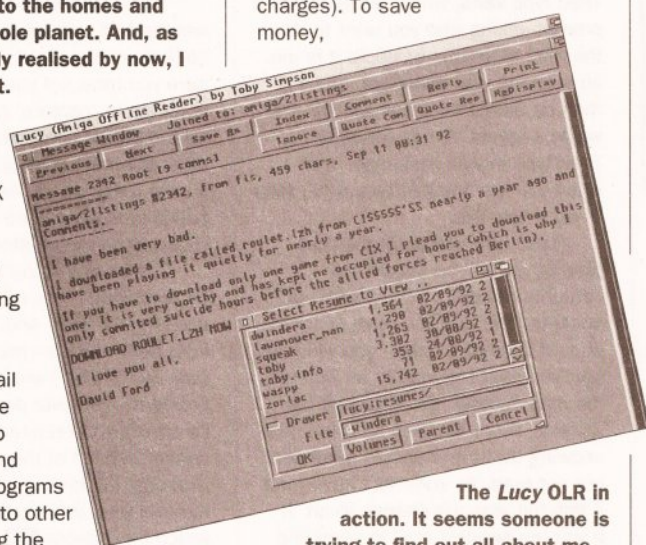
Of course, there is a price to be paid for all these services, but thanks to CIX and *Amiga Shopper*, you can now become a registered CIX user for free. See the box on the next page

for full details of this excellent money-saving offer.

OK, so let's assume that you've just become a member of CIX, and are now wondering just what to do next. Well, you could do worse than to take some advice from a guy who posted over 50,000 messages on CIX last year – me, Dave Winder, perhaps better known on CIX as 'Wavey Davey'. Ready now everybody – let's follow the Wavey Davey Guide!

## ON AND OFF AGAIN

We'll deal with the most important things first, and probably the most important of all is looking after your bank account. Even though *Amiga Shopper* has already saved you £25, CIX still costs money to use (see the box over the page for details of charges). To save money,

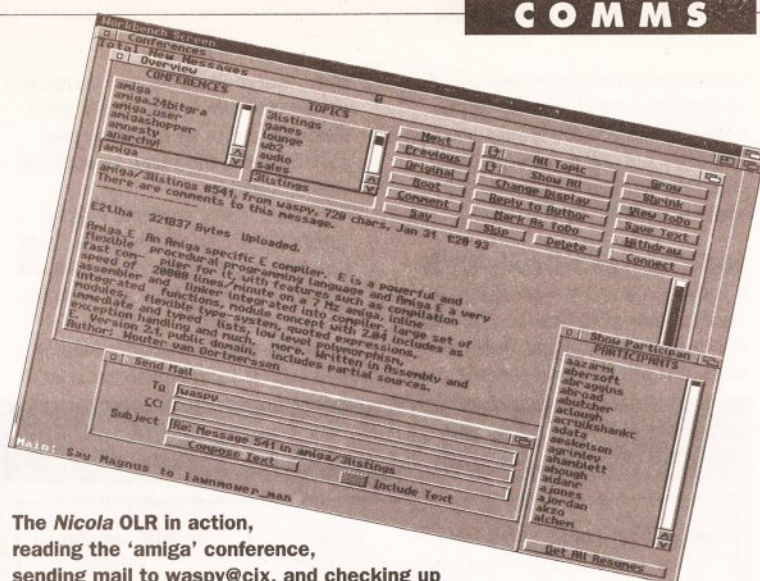


The Lucy OLR in action. It seems someone is trying to find out all about me...

both in terms of on-line charges and the phone bill, you need some method of being able to connect to CIX, grab everything you want, download it and then do all the time-consuming stuff such as reading and replying off-line. Is this asking too much? Not at all. What you need is an 'Off-Line Reader', hereafter known as an OLR. There are two main OLRs available for the Amiga, so get yourself one of them. In fact, for starters I would advise you to get both and see which you prefer, as these things tend to be a very personal choice.

The first of the super OLRs for the Amiga is called 'Nicola' and was written by Richard Harrison (tricky@cix). This is the one I use and you can get it as **nicola.lha** from the **nicola** conference, in the **files** topic.

The second is called 'Lucy' and was written by *Amiga Shopper's* very own programming guru Toby Simpson (toby@cix). You should be able to get this from the **lucy.olr** conference on CIX, although I cannot give you the filename as it has not been officially released as I am writing this column. Toby assured me that it would be available by the time you read this.



The Nicola OLR in action, reading the 'amiga' conference, sending mail to waspy@cix, and checking up on all the current participants of the 'amiga' conference

# Get your CIX

FREE CIX MEMBERSHIP

**This month, a very special offer: free registration to the CIX conferencing system. Dave Winder shows how to make the most of this amazing opportunity**

Both of these programs will save you a lot of money, and I really mean that. So take your Uncle Wavey's advice and make sure you download them straight away. Not sure how to download a file? Don't worry – all will be explained.

## YOU MAY CONFER

CIX operates by being divided into 'conferences', each of which represents an area of interest. In this example I will be using the 'amiga' conference. Each conference is then further divided into areas of more specific interest, known as 'topics'. In CIX shorthand the '3listings' topic of the 'amiga' conference would be written as 'amiga/3listings'. The '3' prefix on the 'listings' topic merely denotes

that there have been two other listings topics which have been filled to capacity with Amiga program files. To join a conference you use the **join** command from the main prompt. So to join the 'amiga' conference you would type **join amiga**.

When first joining conferences you will find that you will automatically get a lot of old messages. This is because there is a default which gives you the last 100 messages in each topic of each conference you join. This can be rather excessive, especially when you are just starting to dip your toes in the water. If you are using one of the OLRs then you can easily reset this default from within the program. For example, using *Nicola* you would just alter the 'autorecent messages'



box in the 'cix settings' section of preferences. You can also do this while on-line by altering your profile. If you are not going to be using an OLR then mail me at CIX, and I'll explain the procedure.

### NO CIX - NO COMMENT

If you are reading a message and want to reply to it, then you will need the **comment** command. Just type **comment** after reading the text, and

Whichever method you are using, you will need to type a full stop '.' on a separate line to let CIX know you have finished, then type **send** at the 'action' prompt.

Some topics contains files - 'amiga/3listings', for instance. Just type **flist** and a listing of all files will pop up on your screen, all ready for you to download.

As an example of downloading files I will tell you how to get hold of

**fdl**, which tells CIX you want a file. Type **fdl nicola.lha** to start downloading the OLR. Once the file is downloaded you will need to unarchive it, which you can do using the **LhA** program, as provided on last month's *Amiga Shopper* cover disk.

So, by now you should be able to join conferences, post messages, and download files. Something else you will want to do, no doubt, is post confidential mail messages. Wavey's Guide will show you how, and as a test you could send some mail to me, letting me know you have taken up the *Amiga Shopper* offer and have arrived safely.

### CATCHING THE POST

At the main prompt, you must first type **mail** to get into the mail system. Then type **send**, which will generate a prompt asking who you want to send the mail to. In this example it is me, so respond with **dwindera**. You will then be asked for a subject title - I would suggest 'Amiga Shopper'. Then type in your message, and when you are finished type a full stop '.' on a new line.

If you type **status** at the mail prompt you will be shown the contents of both your 'in' and 'out' baskets. The fact you have sent mail should be shown here - you will see who you sent the mail to as well as the mail number, the date and the subject. There will also be a full stop showing that the mail has been sent but not read. As soon as I have read it this full stop will change to an 'R'. If you are sending mail to someone

outside CIX there is no way of knowing if it has been read or not from within CIX, and the full stop will be replaced with an 'X'.

### JOINING UP

There's a wide choice of conferences on CIX, but the following are bound to be of particular interest to you. Join the 'amigashopper' conference and you will be able to leave feedback for us about the magazine, send us letters, and of course speak to our Editor, Cliff. Also make sure you join the 'amiga' conference for everything you need to know about the Amiga - and more. All the experts are there, including most of the *Amiga Shopper* Answers Panel, along with hundreds of free files for you to download.

To find out what else you may want to join, you need to look at the conference list. To do this first make sure you have set your comms software to 'capture' (so you can read it off-line) and then type **show** all at the main prompt. You will be shown many pages listing all the public conferences on CIX, together with a short description of each.

Don't worry if you find this all a bit confusing - you will soon get accustomed to it. And remember that I am here to help - just send me mail on CIX and I will help with your problems wherever possible. I'll also be covering CIX-related matters in a regular section of this column, including interesting conferences, Internet use, and much more. So watch this space! **AS**

## CIX CHARGES

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	£2.40 per hour	£3.60 p/h	£6.25

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you will be prompted to leave a message of your own. By commenting, your message will be marked as being in response to that particular message, thus making it easier to follow the flow of a conversation (known as a 'thread' in CIX terms). If you have something to say which isn't connected to another message, use the **say** command instead.

the off-line reader program *Nicola* (but it could just as easily be *Lucy*). First of all you will need to join the 'nicola' conference, and when asked which topic you want reply **files**. By the way, you can use the **switch** command while within a conference to change topics. Now you should be in *nicola/files* so type **flist** to display the files listing. The file you want is called *nicola.lha*, so to download it you should use the file download command

# FREE

## REGISTRATION TO CIX

**CIX and Amiga Shopper are very pleased to be able to offer you free registration to CIX (normally £25 plus VAT). This offer is available until midnight April 30, 1993**

The second most important part comes next - a password. Your password will need to be between four and eight characters long, and is case sensitive, so "magnus" will not be the same as "MAGNUS". Choose a password that is not obvious, and make sure you can remember it without having to write it down. You want to keep your account secure, after all.

After your address and phone number, you will be asked for a credit card number. This is how you are billed for your on-line charges. For details of these charges, see the 'CIX Charges' box above.

Finally, the most important part: you will be asked for any special code. At this point enter the word **amshopper**. Make sure this is done correctly, as this is what will get you free registration.

Shortly after completing the registration procedure, you will receive a comprehensive user manual in the post.



We're talking telephone numbers here - the CIX welcome screen has all the lines you'll need

To take advantage of this special offer, follow these instructions:

Set the parameters in your communications software to 8 data bits, no parity, 1 stop bit ('8N1'). Set your modem to the fastest speed it will support - CIX supports speeds up to v32bis.

Dial CIX on 081 390 1244. Once you're connected to CIX follow

the prompts you are given, as follows. Note that words in bold (like this: **wibble**) are the responses you should type in.

The first prompt you will see is 'login' to which you respond **cix**. This will result in the welcome screen appearing, as shown in the picture.

You will then see the following prompt: "Nickname? (Enter 'new' for new user)" - to which you respond **new**. Next will follow several pages of useful information, including details of on-line charges. It is a good idea to get your comms software to

capture the registration process to disk so you can read it all later at your leisure. Eventually you will be asked for your name, which you should enter.

The next thing that happens is that you will be told a nickname has been generated for you. This takes the form of your initial followed by your surname. So, for example, Harold Abbish would get a nickname of 'habbish'. If you want your own nickname, then answer **NO** when asked if this is acceptable, and enter whatever you fancy.



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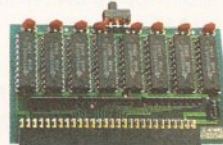
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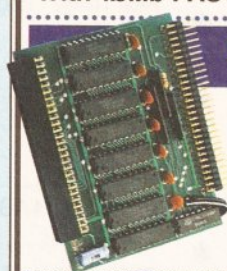
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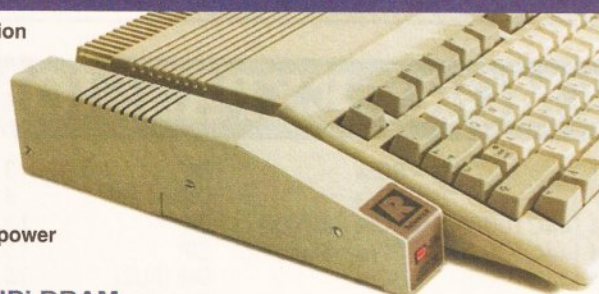
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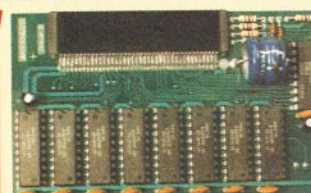
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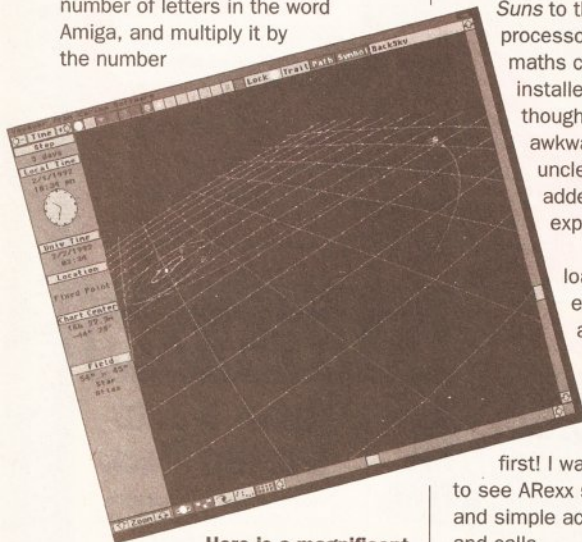
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**F**orty-two, as we all know, is the ultimate answer to the meaning of life, the universe and everything, and the super-computer which deduced this answer must have been (or is it 'will be'?) a future Amiga. And how, you may ask, do I know this?

Simple! Just count up the number of letters in the word Amiga, and multiply it by the number



Here is a magnificent example of how *Voyager* can demonstrate the path of the deep space probe Giotto as it moves through the orbits of the inner planets of our solar system, and continues on to meet the outer bodies. This whole scene animates, showing the flight path of Giotto, and its eventual encounter with Halley's Comet

of letters in the name of the CPU manufacturer. Add the number of people who got an Atari ST this Christmas – and what do you get?

Moving swiftly from the realms of science fiction to science fact, many schools are now taking advantage of technological facilities which would have been inconceivable 20 years ago. I know of schools which are linked to meteorological satellites, enabling them to download weather maps and offer forecasts to local radio and TV stations. Many schools also have telescopes, and the investigation of the cosmos is rapidly becoming a significant part of the Science Curriculum.

## SMALL STEPS, OR GIANT LEAPS?

*Voyager* and *Distant Suns* are two Amiga packages primarily intended to help you explore the universe. They offer broadly similar facilities, but each has particular attributes which make it special.

This month I want to take you through the two programs, and show how you can expand on their features to develop a greater understanding of outer space, as well as learning a little more about the versatility of your Amiga.

## DISTANT SUNS

*Distant Suns* comes in a beautifully presented package containing three disks and a manual. If you are to obtain the best results, the system requirements will be rather steep. A standard 68000-based A500 with 1Mb will run the program, but it is tediously slow – to enjoy *Distant*

*Suns* to the full requires a faster processor, and in particular, a maths co-processor. It can be installed on a hard disk, though I found the process awkward and the information unclear – until I found an addendum inside the box explaining the procedure.

The manual contains loads of information on elementary astronomy, and I found myself reading the whole thing cover to cover before I even looked at the disks. Now that is a

first! I was particularly pleased to see ARexx support, enabling quick and simple access to macro scripts and calls.

On loading, *Distant Suns* presents you with a 180-degree vista of the night sky. The first thing to do is set the vista to your own locality. This is done by entering the latitude and longitude co-ordinates for wherever you happen to live. Once this is done, there in all its glory is the view that you can see tonight – or indeed on any night, as a time and date feature allows access to future and past scenarios.

Two modes are offered to work in: Planetarium mode, and Local Co-ordinate mode. The former is the default mode, and by far faster, but the second mode, as described earlier, does show your own view of the sky, and makes the package so much more relevant.

## STAR PERFORMANCE

Constellations can be switched on and off, giving both the names and outline drawings of the shapes. 'Deep sky', or non-stellar objects outside our solar system can be also be indicated, including star clusters, galaxies and nebulae.

'Field of View' allows the user to choose the angle of sky seen at any time, from 3 to 180 degrees, and 'Landscape' will draw an artificial horizon which can be customised to match your own night-time view.

'Lookdown' displays a view of the solar system from above. The planets are subdivided into three categories: inner, middle, and outer,

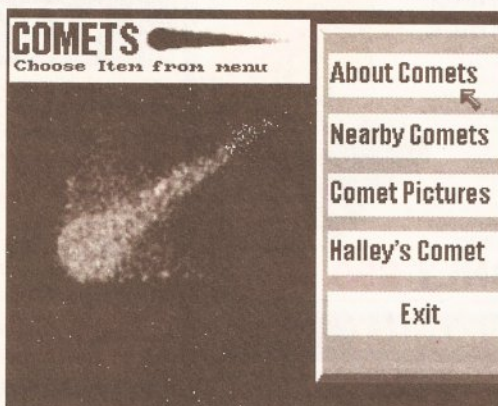
and the their respective orbits can be advanced to show juxtapositions.

The 'Move' and 'Search' options allow movement to any chosen location, or to any desired object, while 'Viewpoint' emulates the visual perspective of a space traveller, allowing you to watch the view as you travel outwards from the Earth and look back at the solar system.

Several other menus add further features such as 'Earth Shadow', 'Skylight Twinkle' and 'Star Trails'.

## SPACE TRAVEL

The feature I like best about *Distant Suns* is the 'Anims' option. Here, a requester enables you to create frames which can demonstrate anything from a lunar eclipse to a journey from Pluto to Saturn. A



You could easily put together a complete multimedia presentation using these programs and *AmigaVision*, and then leave it running for other people to appreciate your handiwork

collection of IFF images on the third disk allows you to include some fairly spectacular graphics digitised from real shots in space.

## VOYAGER

Quite different in its graphical interface, and frankly rather superior, *Voyager* is a much more friendly package than *Distant Suns*. Again, it consists of three disks, and a manual packed with stacks of information for any budding Patrick Moore. This time I installed the software, and before I knew it, an hour had passed as I happily traced the route of assorted comets, space-probes and moons.

*Voyager* is very easy to use, and the ability to analyse the effects of time and distance is handled in a sensible and practical way. All of the features available in *Distant Suns* are present – with the exception of ARexx. One particular feature I like in

*Voyager*, and a boon to journalists, is the facility for saving IFF screens of the current event directly from the pull-down menus. This particular feature, together with the ARexx support in *Distant Suns*, is what gave me the idea for taking the two packages further.

## GETTING YOUR ACT TOGETHER

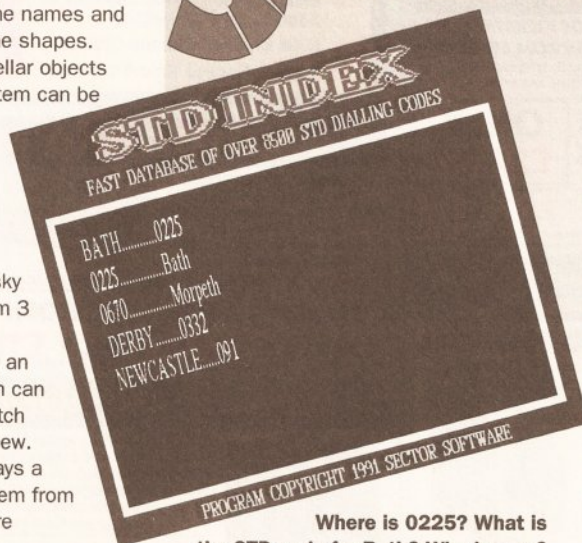
One of the best features of the Amiga is that you can often use

several packages together to produce a result greater than the sum of the contributing parts.

So, what we have here are two brilliant packages, and I find myself thinking: "What can I do to get the most out of both of them, and take the combined information further?"

The answer lies in using another package to combine their qualities,

# Sector Solutions



Where is 0225? What is the STD code for Bath? Who knows? Sector's *STD Index* program does

I often find it fascinating to look through the smaller advertisements in *Amiga Shopper*, to see the beginnings of companies which could turn into major organisations. There are some real gems to be found in these pages – it was in these ads that I found Switchsoft, and the impressive range of 'Control' equipment which we featured in a couple of *Education* articles last year.

My most recent discovery in this area came when I noticed an advert for Sector Software. This company sells a number of products, two of which I thought were worth drawing to your attention.

First up: *STD Index*. This is a database which enables you to



and thus introduce another dimension to the equation. My choice was to use *AmigaVision*.

Combining *AmigaVision* and *Distant Suns* to create an interactive presentation that anyone could enjoy is the ideal basis for producing a highly imaginative project. One impressive example which springs to mind would be a simple point-and-click interface showing the history of Halley's Comet. You could create a presentation based on this subject which first introduces 'background' information on comets, saying what they are, what they are made of, and so on.

*AmigaVision* could then address *Distant Suns* through the ARexx port to show the path of a particular comet in relation to other celestial bodies. Zooming in, panning, and all other built-in features could be controlled by ARexx to depict the nature of a comet's behaviour amongst our solar neighbourhood. Following this (after a fancy fade or wipe!) there could be a few pictures of famous comets that can be seen from Earth, with a little bit of information regarding each one.

### WHERE'S HALLEY?

Later, an animation could be displayed using *Voyager*, explaining how the space probe 'Giotto' intersected Halley's Comet. Further information could be displayed on this topic, showing all the necessary procedures involved in sending out a mission like Giotto. A little background information to reinforce the significance of Halley's Comet could also be useful – 1066, William the Conqueror, and all that.

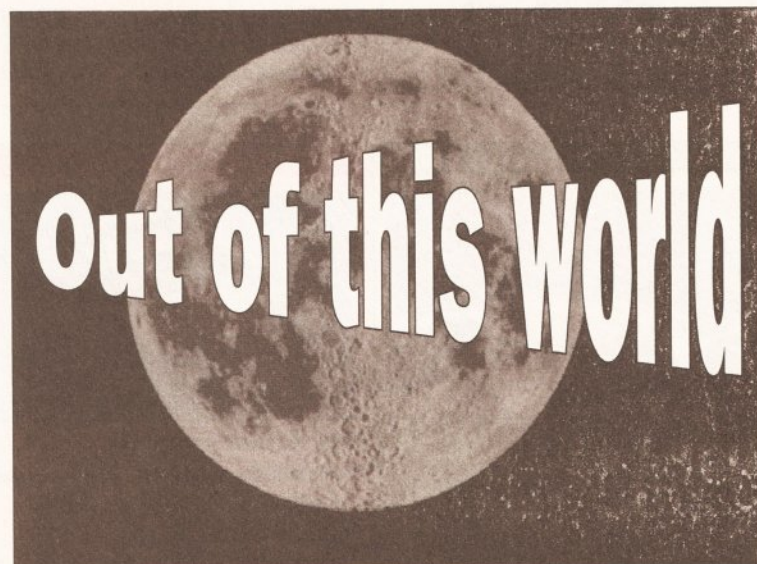
All this interesting information could be compiled using *AmigaVision*

CHECKOUT • CHECKOUT • CHECKOUT • CHECKOUT						
Product	Documentation	Features	Ease of use	Speed	Price	Overall
Distant Suns	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○
Voyager	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○	● ● ● ● ●	● ● ● ● ○

into an intuitive point-and-click interface, enabling users to see what they want to see at the touch of a button. As the *Distant Suns* manual suggests: "You may create a new interface using a combination of *AmigaVision* and a touch screen for a museum exhibit."

Presentations can be put together which stretch multimedia programs to their limits. For example, an animation could be created showing the path of the Saturn V rocket to the moon and back, with all the various stages of the mission supported by sampled sounds of radio messages and digitised pictures of the Apollo lander craft. The sky really is the limit! **AS**

Below: An example of the hi-res pictures available with *Distant Suns*. These are digitised images taken from real photographs supplied by NASA – just the ticket for a presentation on the Apollo moon missions. You could even load this image into *DPaint IV*, grab it as a brush, and, using the [+] and [-] keys, create an animation of the approaching moon. For the very best results, add a little digitised music from Holst, and put it all together with *AmigaVision*



**Stand by for lift-off! Wilf Rees journeys into space with two astronomy programs, and then comes down to earth with Sector Software's budget product range**

### SHOPPING LIST

*Distant Suns* ..... £39.95  
*Voyager* ..... £39.95  
 Both available from:  
 HB Marketing  
 ☎ 0753 6860000

*Amiga-Z88 LINK* ..... £25  
*STD Index* ..... £14  
 by Sector Software  
 ☎ 0772 452414

identify British Telecom telephone codes and/or cities or towns, simply by either entering the unknown STD code, or by entering the name of the location. This can be very useful if, for example, only a telephone number is given in an advert, and you want to know the approximate geographical location.

### THE MISSING LINK?

It is becoming increasingly common to see students using notepad computers in schools, either as a means of recording data, or as a diary or calculator. Sadly, in the absence of an Amiga portable, it's not always straightforward to transfer data from one of these notepads to a 'proper' computer, like the Amiga most right-thinking teachers keep on their desks.

To this end, Sector Software sells a Z88 to Amiga link. The Z88 is an A4-sized portable, and weighs

about 2 lbs. Originally the brainchild of Sir Clive Sinclair, it has been around for a few years now – you sometimes see Z88s being sold off cheaply in electronics stores. However, the design has stood the test of time – the recent Amstrad NC-100 notepad is a close relation. I use a Z88 regularly, and indeed am writing this article on it right now.

In the past I have had to dump down any work done on the Z88 to PC, and then transfer it across to my Amiga. This link could be a

tremendous asset for people like me, and certainly for students who have their own Amiga at home.

The package comes complete with the hardware link, software and manual. A special lead connects between the serial port of the Amiga and the 9-pin port on the side of the Z88. The software is so easy to use that I had no need to even look at the manual – once the Z88 was set for 'Import/Export' mode, the software in the Amiga recognised this, and registered 'Receiving'.

Data transfer is not particularly fast, sending 1500 words in about 10 seconds, but the quality of transfer is faultless. Text arrives as ASCII characters, all ready to be imported straight into a word processor or DTP program.

This is a neat piece of kit which does everything it says it will. I would recommend it to anyone who wishes to extend the capabilities of their equipment, as it will give a new dimension to the ability of their hardware to share information.

CHECKOUT • CHECKOUT • CHECKOUT • CHECKOUT						
Product	Documentation	Features	Ease of use	Speed	Price	Overall
STD Index	N/A	● ● ● ● ○	● ● ● ● ●	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○
Amiga-Z88 Link	● ● ● ● ○	● ● ● ● ○	● ● ● ● ●	● ● ● ● ○	● ● ● ● ○	● ● ● ● ○





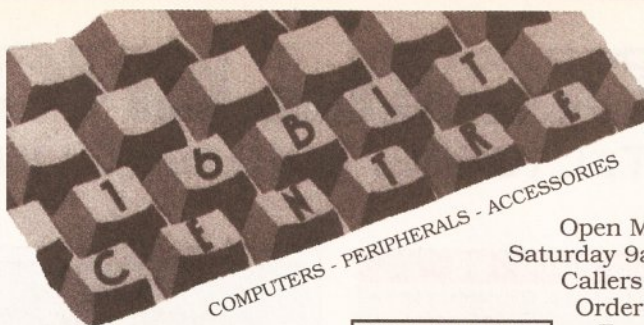






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**14Mhz Accelerator** doubles clock speed of A500 £55. 0.5Mb RAM expansion £15. Both only 6 months old. Both boxed with instructions. 0993 778596 evenings.

**Amiga 1500** with GVP II 52 meg hard drive, 3Mb RAM, Philips CM8833II monitor, SAS, DevPac 3 and over £100 worth of original games. Only £600. 0227 771146

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software pack Maxiplan, Pagesetter, Infofile, printer cable, PenPal 1.4v, PD disk collection, manuals, hundreds of magazines, all mint boxed, offers? 0248 601232 after 6pm

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**A500 3Mb** (1Mb Chip), Kickstart, Workbench 2.04/2.05, 52Mb Supra Hard Disk. Mouse, manuals, disks, PSUs and boxes £500 onvo. 0705 551119 after 6pm ask for Murray

**Amiga 1500** modulator, 2 joysticks, loads of games, PD demos, will deliver within 100 mile radius of Cheltenham free, cost £300. Mark or Lee 0242 226820

**Modem Supra-Fax** V32 bis 14,400 baud inc. modem cable GPFax software worth £40 £220 Vortex At-Once+ 16MHz 286 PC/AT emulator for A500 £100 Roland CM-32P in editing s/ware and 2 PCM cards £200. 071 359 9508 after 5pm

**Wordworth v2** update for Amiga 500 all disks and instruction book, as purchased. Insufficient memory reason for sale £40. 0533 640599

**Amiga 1500** 3 Meg RAM + Philips 8833II stereo monitor + Star LC200 colour printer £800 ono. 0256 26952 evenings

**Amiga 500** 1 Meg £1000s worth of software £210. Vortex 286 hardware emulator with lot of software £140. Also simple repair Swift printer £65 or £365 the lot. 0602 664393

**Amiga 2000** 1 Mb £150. Star LC-10 mono printer £50. 2400 baud modem £30. External disk drive for Amiga £30. Andrew on 0380 850553 after 7pm

**A500 Plus** GVP 52 Meg hard disk 2 Meg RAM boxed all manuals, still under guarantee £470 ono. Calum 0436 78356

**Supra RAM 500RX** for 500 or 500+ as new 4 Meg installed, expandable to 8 Meg £130 ono. Also Superbase Pro 4 unwanted gift £100. Phil 0635 582406 after 6pm

**GVP Series II** 52Mb hard drive for A500 boxed with manual. As new £250 ono. Will 0532 697470

**Amiga 2000** 3 Meg, two disk drives, WB 2.04, 40 Meg Quantum £450. CBM Flicker Fixer £100. CBM AT bridgeboard, VGA, 40 meg, serial card 1.44 meg, 1.2 meg floppies £300 ono. 081 651 2773

**Amiga 2000** £300. G-Force 030-40 MHz, 4Mb RAM £600. F/fixer £70. Memory card 8Mb £150. Accelerator

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**KCS** PC emulator for A500+ £220. Includes DOS and 5.25" drive. Andrew on 0723 368779 after 6pm

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## PERSONAL

**Gamer-Link!** The pen-pal club for gamers, run by gamers! Free swap service! Club fanzine! Tips'n'cheats library! Full details available by sending SAE to 28 Churchfield, Ware, Herts SG12 0EP

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## True or false? In this month's programming tutorial, Toby Simpson goes right back to basics and explains the art of making decisions in C



# Sailing through

In the last thrilling installment we discussed perhaps one of the most difficult concepts of C programming, the pointer. If you recall, a pointer is a special variable type which, rather than actually holding a value, holds a pointer to the memory location where that value is stored.

This month, we're back-stepping a little and looking at some of the fundamental workings of C. You'll need to be familiar with these before you can sit down and write your first top-selling application.

We'll start with the **if** statement.

A programming language consists of three fundamental processes: sequence, decision and iteration. Sequence is going from one step to another, decision is saying "if <a condition> occurs, do <something>". Iteration is the same as repetition, and involves doing something a number of times.

Every programming language must have the facilities for all of these steps. We've already dealt with sequence and iteration, by writing some simple programs and using the **while** command. So now let us discuss decisions. The format

of the **if** command in C is like this:

```
if (a condition is true) do something
```

For a start, let us get our definition of 'true' together. What C does is evaluate what is present between the two brackets after the **if**

statement (this is the 'expression'). That result will either be zero, or not zero. If it is zero, the result is said to be 'false', while a non-zero result is 'true'. Take this simple example:

```
if (2==2) printf("Hello \n world\n");
```

If the expression is evaluated to 'true' then it prints 'Hello World' on the screen. In this case, 2 does equal 2, so the result is true and the string is printed. If we'd said:

```
if (2==5) printf("Hello \n World\n");
```

then no string would have been

## Through the gates of logic

Inside your computer are millions of tiny electronic gates. These gates are responsible for every operation the computer carries out, but work according to very simple principles. In essence, 'logic' gates (as they are called) open to let information through if a given set of conditions becomes true.

For example, the 'and' gate has two inputs and one output. If both the inputs are binary 1, or on, then the output is 1, or 'true'. For any other combination of inputs, the output is 0, 'false'.

The 'nand' gate is a 'not' 'and', and quite simply 'nots' the output of the 'and' gate. This means that putting a 1 and a 1 on both inputs provides a 0 output ('false'), and any other combination gives a 1. In C you have the option of using these basic building blocks, and others to achieve what you want. For instance, the 'and' operator is **&**, and just like the '=' operator, there is a double version called **&&**. Take a look at this code example:

```
if ((counter == 5) && \n
```

### LISTING 1 • LISTING 1 • LISTING 1

```
/* Program to input a string, and test to see if it meets
   certain conditions, showing the use of the if statement. */
#include <stdio.h>
#include <string.h> /* Include string functions */
void main(void)
{
    char test_string[256];
    int length;
    printf("Enter a string beginning with a Z and more than 4
in length.\n");
    scanf("%s", test_string);
    /* Get the length of the string by calling strlen() */
    length = strlen(test_string);
    /* Show a message if you entered nothing */
    if (!length) printf("You entered nothing\n");
    /* Show a message if it was only just bigger than 4 chars
*/
    if (length == 5) printf("String was 5. You could have made
it longer\n");
    /* If the length is 2 or 4, show a message */
    if ((length == 2) || (length == 4)) printf("It was a 2 or
a 4, not good enough I'm afraid\n");
    /* Check if it was right, if so, show it otherwise show an
appropriate message */
    if ((length > 4) && (test_string[0] == 'Z'))
        printf("Well done.\n");
    else
        printf("You failed. Your string was %ld long and
started with a %c.\n", length, test_string[0]);
}
```

### LISTING 2 • LISTING 2 • LISTING 2

```
/* Demonstration of the switch statement */
#include <stdio.h>
#include <string.h> /* Include string functions */
void main(void)
{
    int test_number;
    test_number = 0;
    printf("Enter a number from 1 to 4\n");
    scanf("%d", &test_number);
    /* Depending on the value, perform an action */
    switch(test_number)
    {
        case 1:
            printf("This is the one condition\n");
            break;
        case 2:
            printf("Two oh yes.\n");
            break;
        case 3:
            printf("Three three\n");
            break;
        case 4:
            printf("This was the four!\n");
            break;
        /* This is done if no other conditions are fulfilled */
        default:
            printf("You didn't enter a number from 1 to 4\n");
            break;
    }
}
```



printed. This is because 2 does not equal 5, and the expression evaluates to 'false'.

It's at this point I'm going to introduce the logical 'not' operator, represented in C by the exclamation mark character, '!'. Now, this may sound complicated, but it's not. The 'not' function is a single, simple logical operation – it turns binary 1s into 0s and vice-versa. Basically, if you apply a 'not' operator to a 'false' value, you get 'true', and so on. The silicon chips inside your computer are full of small logic gates, each performing a logical operation such as 'not'. See the table below for more information if you're interested.

So, let's re-write the last line we

```
(another_counter == 6)) ↵
printf("Hi\n");
```

C evaluates the expression like this. Assume that **counter** does equal 5, and **another\_counter** does equal 6. Both the sub-expressions in brackets will evaluate to 'true'. Then we simply say "if ('true' and 'true') evaluates to 'true', print Hi".

Languages like BASIC do this with the 'and' and 'or' statements. You may have never realised what they actually do, but now you know. Below are the 'truth tables' for some of the common functions, 'and', 'nand', 'or' and 'nor'. Each of these four examples have two inputs (A and B) and one output. (Q).

		'and'	'nand'
A	B	Q	Q
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

		'or'	'nor'
A	B	Q	Q
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0

The 'nand' gate is of particular interest to electronic engineers as it is the basic logic building block. It's the simplest to build, and can be used easily to make all of the others.

in other words, if the expression evaluates to 'false', then the **else** bit is run. It's a good way of reducing the number of **if** commands in a program and making you code much more readable.

What happens if you want to execute more than one statement

after an **if** command? The following won't work:

```
if (length == 5) printf("It ↵
was 5\n");
printf("Oh yes it ↵
certainly was.\n");
printf("This is a right ↵
mess.\n");
printf("This won't work ↵
as you expect\n");
else
printf("It was not 5");
```

The compiler won't compile this. Only the first **printf**, on the same line as

the **if** statement, will be carried out if the expression **length==5** evaluates to 'true'.

If you want to execute groups of instructions using **if**, then you must enclose them within curly brackets. This means that something like the above example could be corrected like this:

```
if (length ==5)
{
printf("Hi\n");
length = 10;
}
else
printf("It was not 5\n");
```

This is quite important, as we're going to be seeing a whole lot more of these curly brackets over the next couple of articles.

This leads us on to an alternative way of taking decisions. Imagine you have written a program that has a window with ten buttons in it. When a

button is pressed, you have a small routine which returns a value from 0 to 9 in a variable. You then want to do a different thing for each button. With what we already know, this can be done fairly easily,

by using ten **if** statements. However, C has a much better way of doing this sort of thing: the **switch** and **case** statements. Let's write another program which accepts a number from 1 to 4, and does a different thing for each possible entry – as shown in Listing 2, on the left.

There are a number of things to be said about this program. First, we have the **switch** statement itself. This indicates what we are using as our test number. Then for each case we wish to address, we need one **case** statement followed by the value we're interested in, followed by a colon. Then we can have as many commands as we want, followed by a **break**. There is a special 'case' too, called **default**. This is executed if none of the other cases occurred.

This month we've talked about decision making in C. Next month, we'll be looking at the **for** and **do** statements, and then we'll go on to talk about structures. After that we'll be ready to write our own Amiga utility, so stay tuned! **AS**

## EQUALITY AND ASSIGNMENT: MORE EQUAL THAN OTHERS

One of the most common and difficult-to-trace bugs in C programs is a confusion of the equality operator '==' and the assignment operator '='. Although they look similar, they mean very different things. It is easier to understand if you learn to 'read' them at an early stage. When you're looking at something you've typed, read '=' as "becomes" and '==' as "is equal to". When you come across a line you're not sure of, read it to yourself in this way, and all should become clear.

Let's try it now, with the following bugged line:

```
if (counter = a_variable) printf("Hi\n");
```

This is potentially dangerous. What we're trying to say is: if the two variables **counter** and **a\_variable** are

the same, then do something. What we're actually doing is putting the contents of a **variable** in **counter**. This would cause all sorts of nasty bugs. Reading it out loud gives: "If (**counter** becomes a **variable**) print Hi." If you replace the '=' with '==', then it correctly reads "If (**counter** is equal to a **variable**) print Hi."

The problem with other languages, particularly BASIC, is that they make no differentiation between the two operations, which do totally different things. This teaches bad programming, which turns into confusion and longer learning periods when the user tries to understand the difference. To be honest, C does not help by using a single equals sign and a double one, making it easy to mistype them. Other languages, Pascal for instance, do this better.

## "A programming language consists of three fundamental processes"

## WHAT TO INCLUDE

'Include' files are essential. These files contain all the function definitions and declarations that you will need in order to write C programs. Unfortunately, unless you have bought a commercial C compiler, such as SAS C 6.1, then you almost certainly won't have the necessary files. In order to follow this series you are going to have to obtain the includes if you have not already done so.

To get the latest Commodore include files, send a cheque for £25, made payable to Commodore Business Machines, to:

Sharon McGuffie, Commodore Business Machines (UK), Commodore House, The Switchback, Gardener Rd, Maidenhead, Berks SL6 7XA

and ask for the 'Native Developer's Toolkit'. The toolkit is a four disk set comprising the include files for both assembly language and C, for Workbench 2. These work just fine on both 1.3 and 3.0. It also has the 'autodocs' on disk, which describe every single function in the Amiga's operating system, plus example code, utilities, linker libraries and all sorts of other goodies.

If you're serious about Amiga programming, you should also ask about becoming a registered developer, and you will have further information sent to you about that.

did with a small change:

```
if (!2==5) printf("Hello ↵
World\n");
```

This time the string 'Hello World' would have been printed. What has happened is that 2==5 was evaluated to be equal to zero ('false'), and then we inverted it (using 'not'), and it became 'true'. You may not have seen the point of all this just yet, so let's bring back something we have talked about before, the string. Last month, we saw how to call functions and deal with the result, by opening a library and calling a function from it. So, this time, let's write a small program to input a string and show some messages, depending on its length and content. The program appears in Listing 1, on the left.

This example shows a number of **if** statements in action, and uses the 'and' and 'or' operators, **&&** and **||**. See the box above on 'logic gate' operations for more information about these two. It also shows uses of 'not' which we have already discussed, and introduces the **else** statement for the first time. The **else** part of the **if** command only gets executed if the other bit does not –



**L**ast month we looked at the range of Amiga peripheral repairs that you can safely attempt at home. But someday it may become obvious that something is sadly wrong with the old Amiga itself, in which case the thought of a steep professional repair bill can be quite daunting.

However, you shouldn't despair, because help is now at hand. This month we are going to be looking at the Amiga's internal workings, and examining a number of useful tests and repairs that you can do yourself in this area. Again, as in last month's column, I will be concentrating mainly on the Amiga 500, although most of the repairs and techniques will apply to other machines in the range.

appear in the 'Technical Addendum' at the end of this series.)

A successful initialisation is identified by three factors: the power light goes on; the Kickstart logo appears; and the disk drive starts clicking. If any one of these is absent, then you should suspect an internal fault. As with the power supply, you can eliminate the monitor and associated leads as possible sources of the fault by trying them on a friend's computer.

## DOWN AND OUT

Now, before surgery can commence, there are still a few alternatives we should check before opening up our patient. These are:

4. Switch off the power. Remove any Sidecar hard drive. Put the power back on, and reboot. If the Amiga initialises, then the hard drive, expansion bus, or internal ICs may be faulty.

## GOING IN

Having done all the preliminary tests, we are now fairly confident that the fault lies within the machine itself. Often the nature of the fault can be traced back to what you were doing with the machine just before it gave up the ghost. I will deal with this in the third article, which will include a flow chart for identifying certain problems, but, for now, we are faced with surgery.

The Amiga 500 is a very robust and well-built machine – dismantling

couple of containers for holding screws and the like.

## POINT OF NO RETURN

Right, we are ready. Pick up the Amiga, and turn it upside down. Along the front you will see two silver screws and an oval sticker marked, 'Warranty Seal'. If your machine is less than a year old, stop now and take the Amiga back to your dealer, who will fix it for free. Once this seal is broken, your warranty is void, so be warned.

To get the case open, the three screws at the front of the machine will need to be removed. Here, you may find that you are one of the unlucky ones who bought an Amiga during Commodore's 'awkward' period. Instead of the usual Philips cross-head screws, some Amigas have 'star' screws, and this is where the electrical screwdriver comes in. It is possible to take them out with an ordinary screwdriver, but it is not easy – I suggest you replace the lot with simple self-tapping screws of the same size.

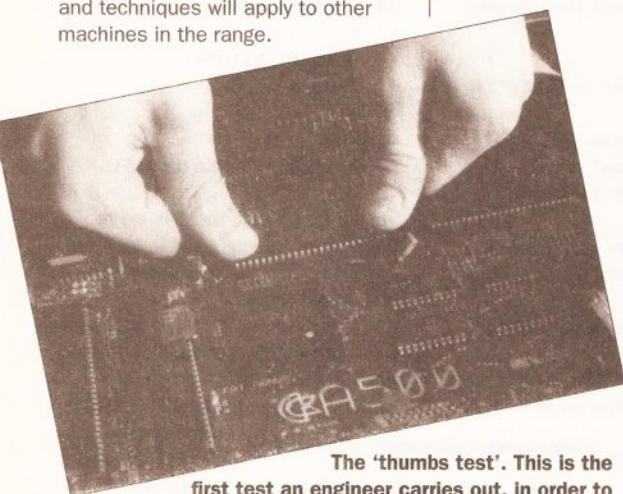
Once these screws are removed, we move to the rear of the machine. Again there are three screws, of which the centre one is covered by the warranty seal. Remove these, and this completes the initial separation of the A500 case. The top half will now lift off to reveal the innards. To separate the two halves requires quite a bit of force, so don't be too cautious in giving the job a little muscle.

The keyboard assembly can now be removed. To do this, follow the 8-cable harness from the assembly to the centre aperture in the metal screen. Just above the point where the cables enter the plug is a cable clamp. Grasp the clamp between two fingers, and gently ease the plug off the connecting pins on the motherboard, using a left-to-right rocking movement. There are four retaining lugs moulded into the base of the Amiga case. Lift the keyboard up and away, and it should come clear of the main unit.

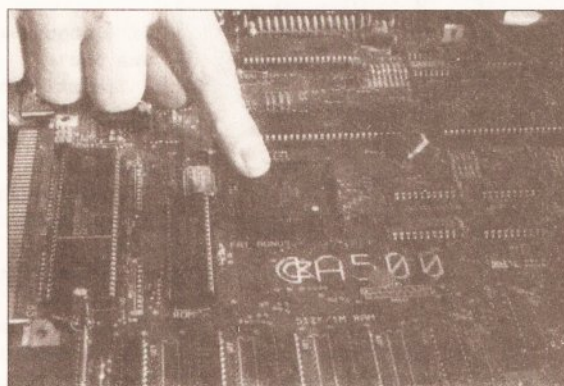
## RADIATION SCREEN

A tin-plate metal screen covers the motherboard. This is intended to meet the strict US radio emission regulations, and will be the next thing that we remove. First, take out the two Philips screws at the front of the screen. Just behind the expansion bus you'll find two further screws. On removing these, a protection plate is released. Put this plate to one side, making sure you remember how it was originally fitted.

If you look around the top edge of the screen, you will see four 'fold-over' metal plates. These need to be lifted to the vertical position. Now the top of the screen can be gently



The 'thumbs test'. This is the first test an engineer carries out, in order to make sure all the ICs are firmly in place



Thermal testing is not a precise means of determining a fault, but experienced engineers can use this technique to seek out unusual hot-spots on an IC

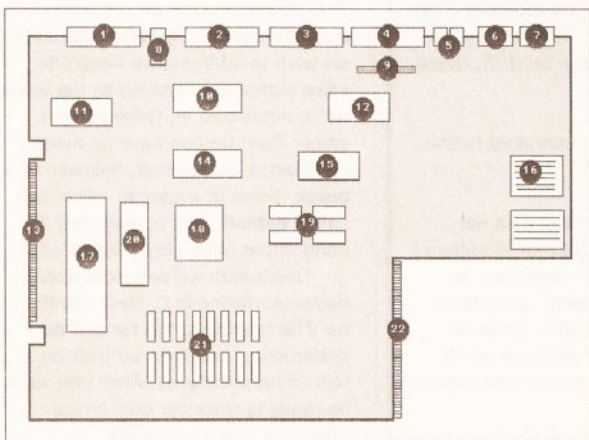
## FOLLOW THE ORDER

As we saw last month, if your Amiga is dead to the world then the very first thing to check is the power supply. But if you've checked this (it's best to try it with someone else's A500 to make absolutely sure) and you still have no joy, then this is what is referred to as 'Failed Initialisation'. When the Amiga is switched on, it goes through a series of internal checks before the Kickstart logo appears. These checks are identified by a series of coloured screens, and they check the internal configurations of things like the keyboard, RAM, and ROM. (The actual colours and functions will

1. Switch off the power. Ensure that the pins on the power supply plug are straight, and that the plug is pushed firmly home. Switch the power back on, and reboot.
2. Switch off the power, and remove any trapdoor memory expansion. Power up again, and reboot. If the Amiga initialises, either the edge connector or the expansion is faulty.
3. Switch off the power, and remove any printer leads. Put the power back on, and reboot. If the Amiga initialises, you may have a faulty printer, lead, port, or internal integrated circuit ('IC').

it requires the collection of tools I mentioned in the first article. You'll also need two electrical screwdrivers, and a pair of long-nosed pliers. Before we begin, do be sensible, and make sure you have a working area that's appropriate for the handling of your computer's delicate insides.

If it's the dining room table, don't start 15 minutes before a meal is about to be served. Similarly, forget the oil-smeared, dimly-lit workbench in the garage, surrounded by rusty nails and solidified open paint tins. You will need a well-lit, large, flat surface, preferably with a clean cloth over the area, and a



## THE INSIDE GUIDE

1. Monitor connector.
2. Parallel port.
3. Serial port.
4. External drive port.
5. Stereo sound output.
6. Joystick port.
7. Mouse/Joystick port.
8. Power input.
9. Internal floppy port.
10. Odd CIA 8520 I/O.
11. Denise 8362.
12. Even CIA 8520.
13. Edge connector.
14. Paula 8364.
15. Gary U5.
16. Revision data.
17. 68000 CPU U1.
18. Agnus 8370.
19. Data path.
20. Kickstart ROM U500.
21. RAM chips.
22. Expansion connector.



lifted out, and placed to one side. The main motherboard of your Amiga will now be visible, and fault-finding can commence.

### THUMBS DOWN

The first test we carry out is the 'thumbs test'. Simple but often surprisingly effective, this involves going around all of the plug-in integrated circuits (also known as 'IC's'), and, with a thumb on each end, applying sufficient pressure to ensure the IC is firmly located into its holder. You should of course also make a quick visual inspection to check that all of the pins are correctly inserted into the appropriate hole, and not bent or missing the slot.

Now identify the 7-pin connector which takes the keyboard plug. Slip the keyboard behind the retaining lugs on the base of the case, and replace the keyboard plug, ensuring the plug is correctly covering all of the pins. Orientation of the plug, as is the case with most connectors, can often be determined by looking at the way the cable naturally lies. If you are in doubt, the black cable goes to the left-hand side. The power supplied to your Amiga from the power supply is only low voltage, so we can safely reconnect the monitor, mouse and power supply. Switch on. If initialisation occurs, then the problem is solved. If not, then it's on to the next test.

### THE HEAT IS ON

The next routine is a thermal test, occasionally referred to as the 'melted finger' syndrome. While this is not an extremely accurate test, it can often be a very good indicator of a chip's general health. The basic principle is that all ICs generate heat to some degree or another. Processors in particular get pretty hot – sometimes hot enough to burn. This is why you will often find miniature fans fitted over the top of CPUs, especially in add-ons like accelerator cards.

To carry out this test, switch on the Amiga, and leave it for a couple of minutes to warm up. After a few minutes, the ICs will have warmed up and their temperatures should have stabilised. Using the tip of a finger, move over all of the surface of each IC in turn, feeling for any hot spots. Keep repeating this process over several minutes.

What you are looking for is any IC which does not stabilise, but continues to increase in temperature in a localised region. If this occurs, you should strongly suspect that this component is faulty. You then have two options: either ask a friend if you can try his or her IC in your machine, or go out and buy the component as a direct replacement.

The procedures I have described here will enable the average user to have a go at the main non-initialisation tests. The principal ICs to check are: the 68000 processor, the Kickstart ROM, Agnus, Paula, Denise and Gary, as shown in the diagram on the facing page. If you have gone through all these tests, made suitable replacements, and initialisation still does not occur, then I'm afraid that you have more or less run out of options. It may be that one of the smaller components on the motherboard is faulty, or that the motherboard itself has a fault, in which case, you are better off seeking help from your dealer.

### PROBLEMS AT POST-INITIALISATION

You may find that your Amiga is getting past the initialisation stage, but once the Workbench logo is loaded from ROM, specific problems may appear after this. Let us begin with by far the most common

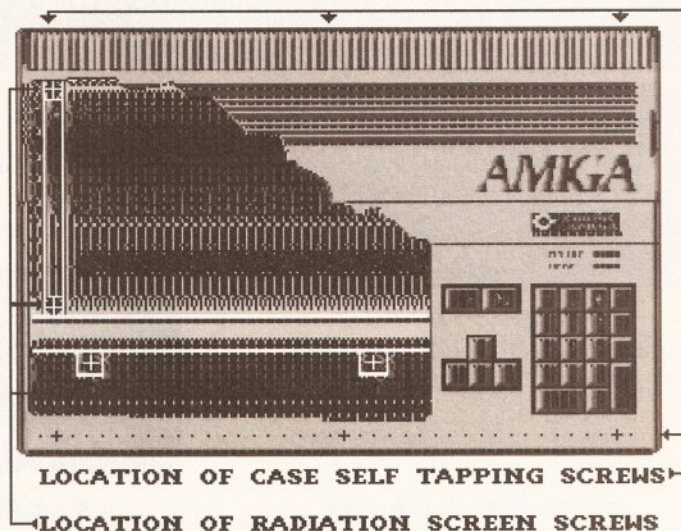
# Work SHOPPER Workshop

problem that appears at this stage, and the repair needed for between 40% to 60% of all Amiga faults. The two little culprits are the ICs known as the CIA 8520s. If you seek out the Component Reference picture in the first article, you will be able to identify them quite easily. The function of these two little beauties is to deal with the parallel port connector, joystick/mouse connectors, front panel LED, internal control lines, keyboard, serial port, floppy drives, and internal timing.

### SERVES YOU RIGHT!

If most people followed the instructions printed in the User Guide, these components wouldn't suffer half the damage that they do. Unfortunately, and I am as guilty of this as anyone, short-cuts often prevail. The User Guide clearly indicates that when connecting external devices, the Amiga should always be switched off. So, every time you think about plugging in a printer lead, or connecting a modem, or even a mouse, you run the risk of blowing one of the 8520s.

## Cutaway View of Assembly



Removing the screws which hold together the case and the radiation shield will void your warranty. If your Amiga has 'star centre' screws, it's more convenient to replace them with ordinary self-tapping screws of the same size

## It's your turn to operate! In the second part of his Do-It-Yourself repairs guide, Wilf Rees shows how to check and replace your Amiga's internal components

Have you ever run into the fault where the mouse will only work in one axis, and refuses to travel the other way? Even a new mouse doesn't cure the problem. This fault arises surprisingly often, and can be prevented simply by following the instructions in the manual. Under these circumstances, the response of the mouse is a fair indication that one of the two 8520s has blown. The test to check if this is the case is

quite simple. Swap the two ICs around, and see if the other mouse axis is now functioning.

### GIVE IT A TRY

There is no earthly reason why these checks and repairs should be beyond the abilities of any practically-minded Amiga owner. So, don't be afraid to have a go – if the worst comes to the worst, you can always dig out your old VIC-20 from the attic! **AS**

## NEXT MONTH

In the third part of this series, we will be looking at floppy drive leads and routine overhauls. I hope that so far you have found the knowledge of how to tackle your own repairs useful, but more importantly, I hope the need never arises to use it!



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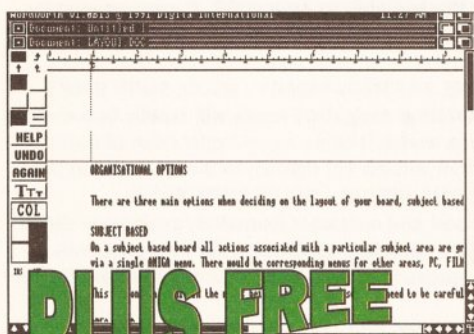
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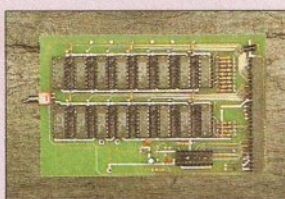
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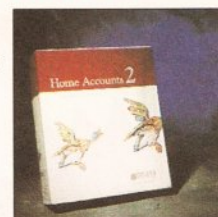


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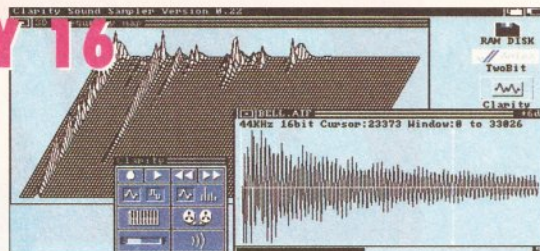


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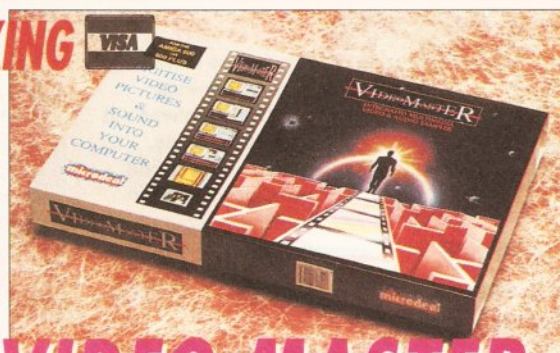
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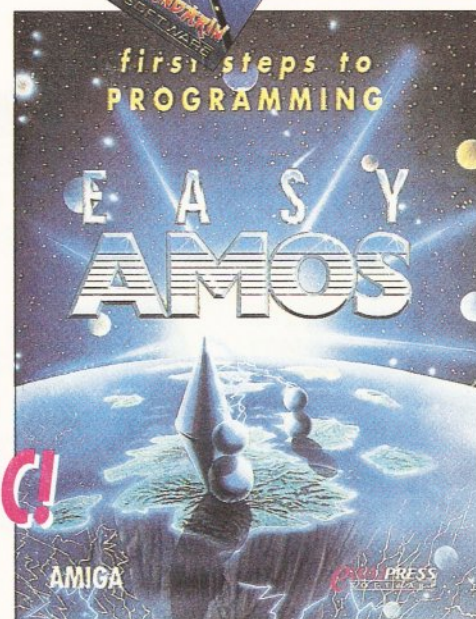


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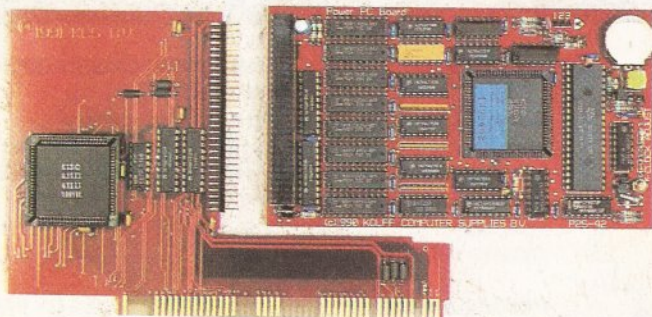
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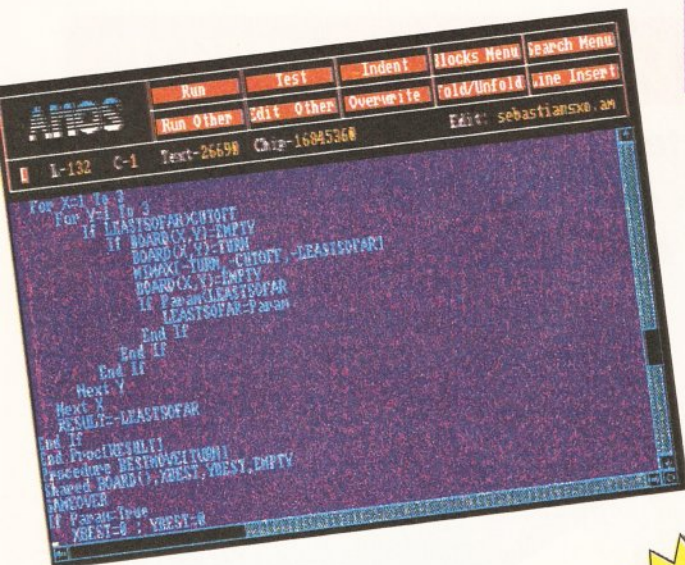
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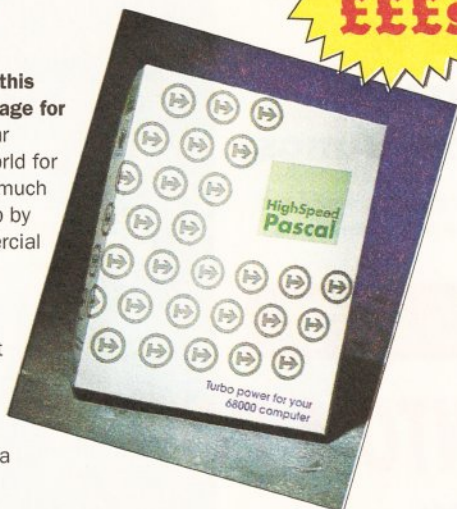
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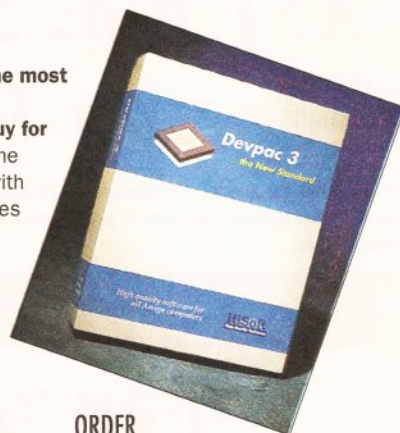


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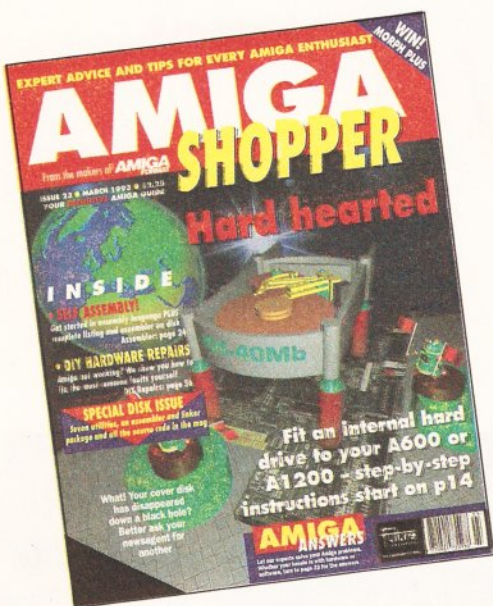
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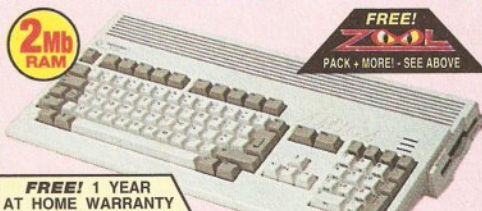
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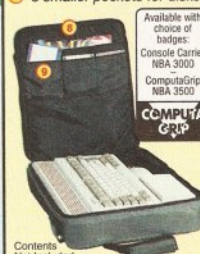
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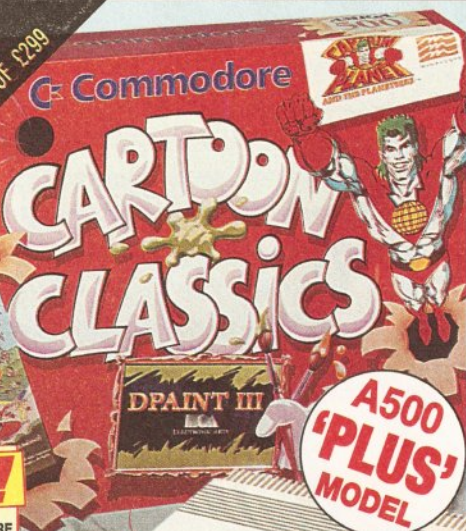
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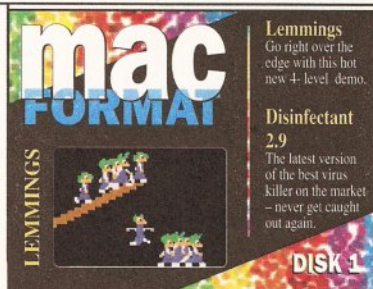
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**O**ver the last couple of months or so we've covered some pretty heavyweight topics. Decision making, loops, conditional loops, procedures and arguments – to name but a few. But, so far, our ARExx scripts haven't actually done very much. In order to make our scripts a little more useful, we'll now move onto the subject of string manipulation or – for the more poetic among you – how to do things with strings.

In general, the ARExx command set is quite minimal when compared to other languages, but string manipulation is one area where ARExx really shines. Whether you need to extract words from a string, strip leading or trailing characters or search for every occurrence of a word within a string, you'll find ARExx more than man for the job. Compared to the rather limited string manipulation commands offered by BASIC, ARExx is a veritable power house.

## WORD POWER

ARExx provides a whole string (pardon the pun) of functions that allow you to work on strings on a word-for-word basis. These functions

**Delword:** As its name seems to strangely suggest, the **Delword()** function deletes words from a string. It gives you pretty extensive control over which words and how many are deleted from a string. It needs to be passed three parameters – the variable name of the source string, the position of the first word to be deleted within that string and the number of words to be deleted. Say, for example, you had a string called **nochance** containing four words 'Jason Holborn For President' and you (perhaps understandably) wished to delete the last two words. You

**Find:** Now here's a powerful function. The **find()** function searches through a string for the first occurrence of a substring (a single word, if you like) contained within the source string that you feed it. This could be useful if you need to get string data from a file on a conditional basis – say, for example, you only wanted those entries that had the word 'sausage' in them.

The **find** function requires two parameters – the name of the variable containing the source string and the variable containing the substring (or, for more direct results,

```
position = 1
find(sourcestring, 'Jason')
```

In this particular example, the **find()** function would look for the first occurrence of the substring 'Jason' within a string called **sourcestring**. If it was found, the position of the substring within the source string is written into the integer variable **position**. If the string isn't found, then **position** will contain 0.

**Subword:** Here's another potentially powerful function. **Subword** allows you to extract a given number of



## LISTING • LISTING • LISTING

```
/*
String functions demo
*/
say "Enter a string"
pull string
count = words(string)
say "There are" count "words in that string"
do a = 1 to count
    length = wordlength(string,a)
    say "Word" a "is" length "characters long"
end
say "Enter a word that is in the string"
pull word
position = find(string,word)
if position ~= 0 then
    say "That word is at position" position
else do
    say "It's not in the string!"
end
exit
```

can be particularly useful when processing sequential files. Say you had two sequential files containing information that you'd like to combine into a single file. These functions would enable you to cut out the information that you required from those two files without having to worry about the length of individual entries. You would just tell ARExx which words you were interested in within the two files and it would then handle the nitty gritty of extracting the words in question.

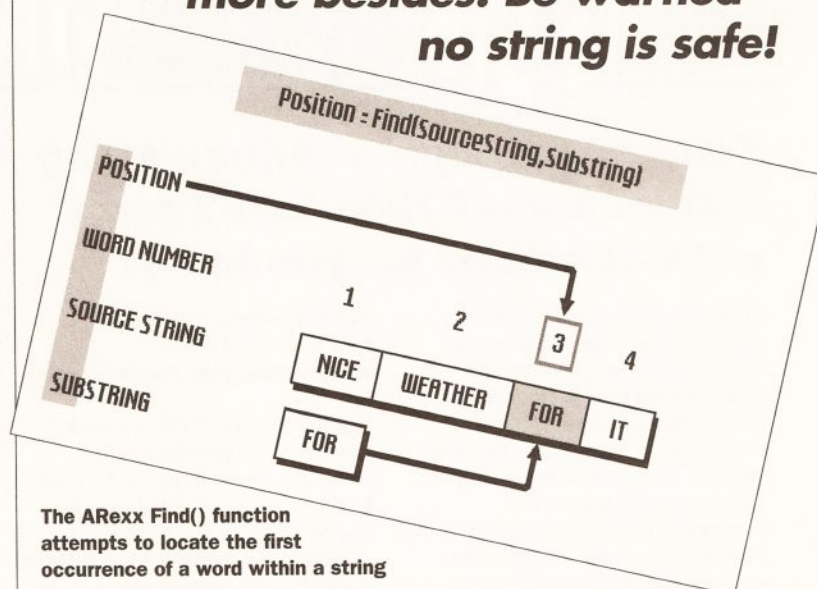
Not convinced? OK, let's take a look at the functions available, and I'll explain what each one does.

would therefore call the **Delword()** function using the following line:

```
result = 1
delword(nochance, 3, 2)
```

This would tell ARExx to delete two words from the string **nochance**, starting at word three. The resulting string ('Jason Holborn') would then be stored into the variable 'result' for further work. Note that virtually all of the string functions that we'll be covering don't work directly on the source string, so our source string ('Jason Holborn For President') is thankfully left intact.

**Jason Holborn shows you how to pull your strings apart, put them back together and a whole lot more besides. Be warned – no string is safe!**



**The ARExx Find() function attempts to locate the first occurrence of a word within a string**

the substring itself). The position of the substring within the string is then written back into the variable defined before the function call.

As always, remember that these functions work on a 'word for word' basis, so the position returned by the **find** function is specified in terms of whole words. A returned value of '2', for example, means that the substring is the second word within the source string.

words from a source string, therefore providing a more flexible alternative to ARExx's **delword()** function. It requires three parameters – the source string name, the start position where word extraction is to start and the number of words that you'd like to extract. Here's the **subword()** function in action.

```
result =
subword(sourcestring, 3, 2)
```



In this example, the **subword()** function would extract two words starting at the third word within a string called **sourcestring**. The resulting two words are then stored in a variable called **result**.

If you just need to extract a single word, then a considerably easier solution would be to use the ARExx **word()** function which, as the

the second word from **sourcestring** and store it in **result**. Clever eh?

**Wordindex:** A slightly different version of the **find()** function is the **wordindex()** function that, instead of returning the position of a substring in terms of words, returns the location of the substring as a character position. Say, for example,

you wanted to know where within the string **sourcestring** the second word started as a character position. All you'd have to do is to pass the **wordindex()** function the name of the source string and the position of the word that you're

interested in. To make things a little clearer, here's an example.

```
charpos = wordindex('Hello J
There Matey', 2)
```

This example would return a value of 7. Starting from the first character in the string, the **wordindex()** function counts along until it gets to the first character of the second word (in this

case 'There') and then returns the position of this first character.

**Wordlength:** An extension to the **wordindex()** function, this works in a very similar manner to the 'LEN()' function in BASIC. However, it's considerably more flexible – instead of being restricted to returning just the entire length of a string (you can do this in ARExx using the **length()** function), the **wordlength()** function can return the length (in characters) of a single word within a string. The syntax of the **wordlength()** function is pretty simple – all it needs is the name of the variable containing the string and the position of the word that you're interested in. Once again, here's an example:

```
length = wordlength('Jason J
Holborn is great', 2)
```

The above example would return the length of the second word (in this

case, a fine surname) as an integer value which is then stored in the variable **length**. Can you guess what the result would be? Yep – 7.

**Words:** Regular readers of *ARExx For All* will remember this function from a couple of months back. What it does is to tell you how many words there are in a string. This can be particularly useful when you need to split a sentence up into individual words, and its syntax couldn't be simpler. All it needs is the name of the variable containing the string and that's it. The number of words within that string is then passed back as an integer value.

Clearly, many of these functions are fairly self-explanatory to use – by all means try them in your own scripts and see. Or, if you're not feeling too adventurous, try this month's example script (on the preceding page) for starters! **AS**

```

HELL> rx RAM:S
Enter a string
There are 7 words in that string
Word 1 is 5 characters long
Word 2 is 6 characters long
Word 3 is 4 characters long
Word 4 is 4 characters long
Word 5 is 8 characters long
Word 6 is 6 characters long
Word 7 is 18 characters long
Enter a word that is in the string
very
That word is at position 4
HELL> rx RAM:S
Enter a string
Amiga Shopper Magazine
There are 3 words in that string
Word 1 is 5 characters long
Word 2 is 6 characters long
Word 3 is 8 characters long
Enter a word that is in the string
format
It's not in the string!
HELL>

```

**When it comes to counting words and letters, this month's sample ARExx script has got it all sewn up!**

name suggests, extracts single words from strings. All you need to do is to tell the function the name of the source string and the position of the word within the string, and the **word()** function then extracts that word. For example, **result = word(sourcestring, 2)** would extract

## MORE STRING FUNCTIONS

### Can't get enough of ARExx string manipulation? Then here's some extra functions for you to try!

**Compress:** Removes a list of characters from the source string. For example, **result = compress('ABCDE', 'BC')** would tell ARExx to remove all occurrences of the characters 'B' and 'C' from the string 'ABCDE'. 'ADE' would then be written into the variable **result**. The **compress()** function can be very powerful indeed. Say, for example, you had a list of filenames that all ended with '.BAS'. Providing the filenames themselves didn't contain any of these four characters, you could use the **compress()** function to strip away the extension.

**Delstr:** Deletes a specified number of characters from a source string. It needs three parameters – the usual source string name followed by the number of characters to be deleted and where within the string the

deletion process is to begin. The syntax is: **result = delstr(sourcestring, start, numberofchars)**.

**Insert:** The opposite to the **delstr()** function is the **insert()** function which, not surprisingly, can be used to insert one string anywhere within another. Its syntax is slightly more complicated – instead of just a single variable name, **insert()** also requires the name of the variable containing the string to be inserted, followed by a value denoting where insertion should start (as expressed in terms of characters – for example, the 5th character along) and the number of characters (although this is optional).

The syntax is: **result = insert(sourcestring, insertstring, start, length, pad)**. If you specify a length value greater than the total number of characters in **insertstring**, insert

will automatically pad out the remaining characters either with spaces (the default) or with the character you define in the pad parameter – handy for text formatting.

**Overlay:** This works in a very similar manner to the 'overwrite' feature offered by most word processors. **Overlay** takes a string and literally places it on top of the characters already in the source string, effectively removing them. It requires five parameters – the source string name, the name of the string to be overlaid, the start position, the number of characters to be overlaid and, once again, a pad character. If the number of characters you specify is greater than the number of characters in the overlay string, the **overlay()** function will pad out the string in the same way as the **insert()** function. Here's its syntax: **result = overlay(sourcestring, overlaystring, length, start, pad)**.

**Strip:** The **strip()** function does just what you'd expect... it strips characters or, to be more precise, it strips leading or trailing characters from any string. What's more, it can also be used to strip every occurrence of a particular character (or list of characters) from a string, making it a very powerful command

indeed. The syntax of **strip()** looks like this: **result = strip(sourcestring, mode, list)**. The **sourcestring** parameter is pretty obvious, but the optional **mode** parameter is worth discussing. Because **strip()** can work in three modes, you have to tell it which you would like to use by specifying either 'T' or 'L' – which strip trailing and leading characters respectively. To make things more complicated, the mode parameter can also be 'B' which will strip both leading and trailing characters. If you leave this blank, the **strip()** function will simply strip out all occurrences of a given character list.

The **list** parameter simply tells the **strip()** function which characters you would like to have removed. If, for example, you had a string that started with four hash ('#') symbols, you could strip them away by setting the **mode** to 'L' (for leading) and then specifying the hash character in the **list** parameter. No problem!

**Upper:** A very simple and (dare I say it?) self-explanatory function that does basically the same job as BASIC's 'UPPER\$' command and C's 'Strupr()' function. The syntax is similar too – just a single parameter needs to be fed to the function with the result written back to the variable defined at the start of the function call. For those of you that really need it, using **upper()** looks like this: **result = upper(sourcestring)**.



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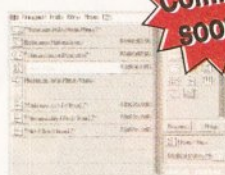
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What do we mean, Amiga Format is going live? That the world's best-selling Amiga magazine is turning into some kind of Frankenstein's monster?

Well, no. What we mean is that we've arranged a very special event this Spring for all Amiga owners. It's a computer show like no other, arranged exclusively for Amiga owners and inspired by the people who run Britain's favourite computer magazine.

What will be happening there? Well, first and foremost there will be stall after stall overflowing with great Amiga bargains - games, hardware, serious software, the lot. Just like in Amiga Format.

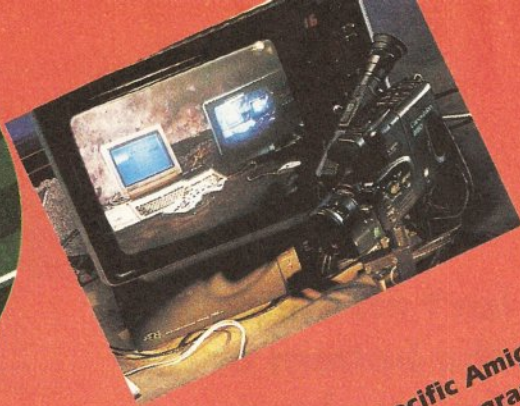
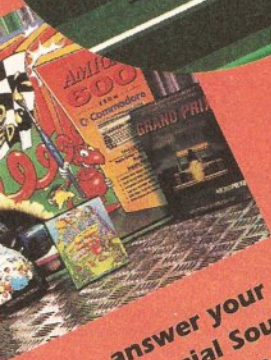
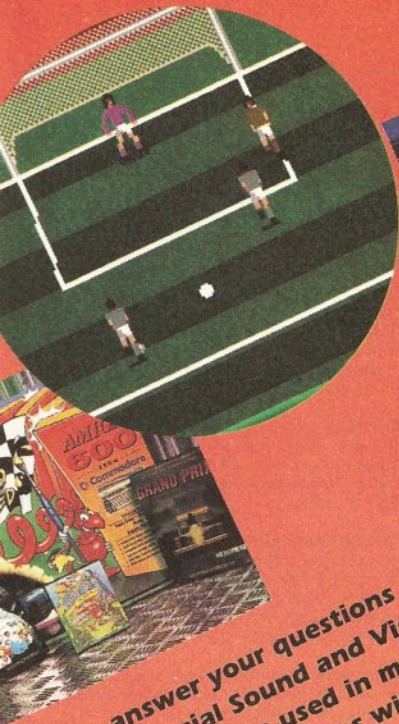
Naturally, because it's a live event that also means you can get advice and see products demonstrated by the people who make and sell them. Which makes life an awful lot easier. And that's as well as taking advantage of some very special prices.

So it's a great place to go shopping, but there's a lot more besides.

The Amiga Format team will be there along with a host of other Amiga experts, to have a chat,

# What happens when the world's top magazine goes





See the Amiga at its best!

answer your questions and help you out with any specific Amiga problems. A special Sound and Vision area will concentrate on Amiga graphics and music, and how they can be used in making your own videos. The experts from Camcorder Plus and Future Music magazines will be able to give you the benefit of their advice. For gameplayers, there's the Amiga Power arcade where you can see - and play - all the latest top game releases. And you can experience Virtual Reality for yourself, too. The place is Wembley Exhibition Centre - a prestige central London site - and the time is Friday May 7th to Sunday May 9th. Much more has yet to be revealed about what new products will be launched at the show, and other special events, so keep an eye on the news pages of your favourite Amiga magazine. But what's certain is that it's going to be quite an event. If you've got an Amiga, you really ought to be there. Make sure to get it arranged right now, and we'll see you there!

# When Amiga goes live?



Tickets can be booked in advance with our credit-card hotline 051-356 5085 which means you get in for a bargain £5.95 and you don't have to queue to get a ticket. Entrance on the day costs £7. Entrance for children under 10 is £5 (no reduction for advance booking) Opening hours are Friday 7th May and Saturday 8th May 9.30am to 5.30pm, Sunday 9th May 9.30am to 4.30pm. See you there!

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**Action Replay Users Club** For help, tips, lists of pokes. Free. For more details contact Gordon Hagan, 66 Muirside Avenue, Kirkintilloch, Glasgow G66 3PR

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**Allbit Computer Club** General hints and tips, advice, competitions, draws, shop. Entrance fee £1.50. Contact Mick, 170 Cloughton Ave, Crewe, Cheshire CW2 6ET

**Amiga Addicts** Newsletter and open nights For info SAE to A Minnock, Clonkelly, Binn, Co Offaly, Ireland

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**AmigaBASIC club** Free bi-monthly disk, help for beginners and experts. Membership £10/year. Contact: Conran Ahmad, 15 Weybridge Rd, Thornton Heath, Surrey CR7 7LN ☎ 081 689 9102

**Amiga Beginners' Club** 110 Whitehill Park, Limavady, Co. Londonderry BT49 0QG. Club to help newcomers. Bi-monthly club disk, and a small PD library. Membership £2 for a single disk, or £20 for every issue

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**Amiga Graphics Club** I want to set one up! But to do so, I need your help. If enough of you reply, your graphics can only benefit. For details you should write to Jonathan McBrien, 16 Drumbawn, Enniskillen, Fermagh BT74 6NF

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**AMI-INFO** Interested in the serious side of the Amiga? then send SAE to Paul Caparn, Homeside, Higher Warberry Road, Torquay, Devon TQ1 1SF.

**AMOS Programmer Club** Free membership, swap AMOS programs and PD, disk magazine and help for new users. Contact Gareth Downes-Powell, 6 Brassey Avenue, Broadstairs, Kent CT10 2DS

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**Angus Amiga CDTV club** Contact J Robertson, 22a High St, Brechin, Angus DD9 6ER ☎ 0356 623072. Review software, discuss anything Amiga. Free membership

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**Bournemouth Amiga Club** Problems, fun, social beginners welcome. Free. Contact P Chamberlain, 36 Homeoaks, 30 Wimborne Road, Bournemouth, Dorset BH2 6QA ☎ 0202 296714

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**Chester-le-Street 16-Bit Computer Club** Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Meets Mondays from 7.30-9.30pm. Exchange advice and swap tips. ☎ Peter Mears 091 385 2939

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**Club Amiga** £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shiny Row, Houghton Le Spring, Tyne and Wear

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**Comp-U-Pal** Australian group for users in the outback. Newsletter, helpline, PD library.

## GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to **Amiga Shopper User Groups List, 30 Monmouth Street, Bath BA1 2BW**. We reserve the right to refuse entries.

AS24

Group name.....

Contact name.....

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Contact address .....

Place of meetings.....

Time of meetings.....

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**Membership** A\$24. Comp-U-Pal, c/o MDA, PO Box 29, Knoxfield 3180, Victoria, Australia

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**Computer Club** 16 Laton Rd, Hastings, East Sussex ☎ 0424 421480. A 16-bit club dedicated to being computer enthusiasts Membership costs £15 per year

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**Exeter 16 Bit User Group** Andrew Deeley or Phil Treby at 25A Gloucestershire Rd, Exwick, Exeter, EX4 2EF. Meeting every Wednesday 7pm. Programming £6 per annum

**Free PD Club** Send disk + SAE for more info to Adrian Porter, 237 Prince of Wales Rd, Manor, Sheffield S2 1FG. Free membership

**Fylde Computer Club** All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ ☎ 0253 772502

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**GFA Basic Forum** Contact J Findlay ☎ 0788 891197 or send SAE to 52 Church Rd, Braunston, Nr Daventry Northants NN11 7HQ. Free advice on programming in GFA. Also tutorial disk for sale. Beginners and advanced users welcome. Free membership

**Gibraltar Amiga Users Club** PD library, monthly newsletter, disk magazine, competitions, regular meetings (in the John Macintosh Hall). Membership from £6 per year. Contact David Winder, 7 Lime Tree Lodge, Montagu Gardens, Gibraltar ☎ 010 350 79918

**Guru Masters PD** demos etc, contact the Sheriff, 111 Sherbourne Rd, Banbury, Wolverhampton, WV10 9EU ☎ 0902 782277

**Hampshire PD Club** Mike Gallienne at 79, Carless Cl, Rownes, Gosport, Hants, PO13 9PW on 0705 585323. Public Domain Disks at 35p. Monthly competitions. SAE for more info to the above address. £10 a year

**Harleys PD Swaparama** Public domain swapping by mail. Contact G Varney, 140 Weston Drive, Otely, West Yorks LS21 2DJ ☎ 0943 466896

**Hereford Amiga Group** Membership free, help, exchange of PD and shareware. Lotus Turbo 2

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**Hyndburn Amiga Users Club** Tuition, advice, PD, and more. Meets Mondays, 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS ☎ 0254 395289

**In Touch Amiga** Penpals, contacts, PD, swaps £2.50 per year. For more information contact P Allen, 0342 835530, PO Box 21, Lingfield, Surrey RH7 6YJ

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G6051 (P) (NEW) Bridge (The full card game - special A1200 version included!)

G6052 (P) Wordsearch 2 (2 good versions with loads of puzzles)

G6038 (P) Cybernetix (The best PD game by far - like Defender!)

### CHILDRENS

C712 (P) Colour Pad (New colouring book for youngsters)

C714 Storyland II (Brilliant kids game)

C719 (P) Total Concepts (2 Disks!) (Astronomy & Dinosaur Education Pack - Good!)

C720 (P) Colour the alphabet (Great education for early learners 4-5+)

C784 (P) Doody. (Like Mario Bros and very good - NEW!)

C725 (P) Mr+Mrs. (Platform adventure for 7yrs+ - it's got everything!)

C726 (P) GCSE Maths (Great revision disk)

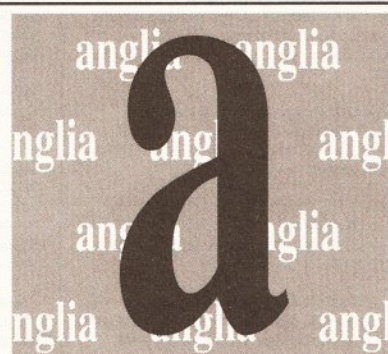
C727 (P) Top Secret (Reviewed as the best platform game ever!)

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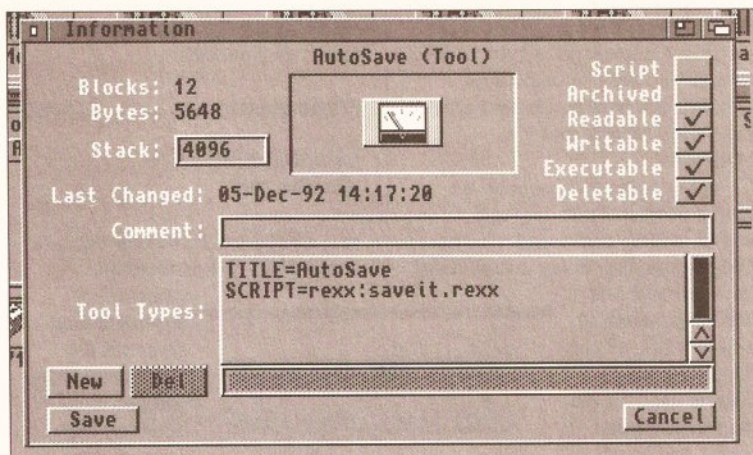
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If you know your way around ARexx, you can use *AutoSave* to back up your work (or do anything else) at regular intervals – thanks to Fish disk 771.

**A**s regular readers will know, I frequently look at the latest disks from Fred Fish – a man who has made it his mission to collate Amiga PD and shareware, and distribute it around the world. Indeed, this month we have disks 771 to 790 under scrutiny – supplied by those nice people at Anglia PD. Unfortunately, however, it seems uncertain how long the Fred Fish collection will continue in its present form.

Reproduced here is a message which Fred himself has E-mailed around the world:

"Over the last couple of years, I've noticed a trend where fewer and fewer people are on my direct subscriber list. This last year has seen a particularly sharp decrease, from about an average of 75 subscribers to the current low of 41. That's right, there are only 41 people or organisations in the whole world that receive disks directly from me as of January 17, 1993, with about half of them being outside the USA.

"During this last year, the amount of time I have had available to spend constructing disks, doing accounting, and otherwise managing the library has also dropped sharply, so that more than ever I depend

upon using outside help for things like sorting the submitted material, creating prototype disks which I then use for constructing the final disks, and doing the actual duplication, packaging, and shipping of the disks. I cannot expect these people to work for nothing, so I have been paying them reasonable compensation for their time out of the ever-dwindling subscription income.

"It has reached the point where sometime in the next month or two I

will make a decision about whether or not to shut down the library, since if there are insufficient incoming funds to meet the operating costs as well as pay for an occasional perk like

a trip to an Amiga show once or twice a year, or some new hardware toy, there is little incentive to continue spending 20-30 hours a month running it.

"If you are in a position to influence a club, computer store, or other Amiga-related organisation to maintain a direct subscription for new disks, and thus help fund continued maintenance of the library, and are interested in seeing the library continue to grow, I'd urge you to consider doing what you can to help push the number of direct

**"It seems uncertain how long the Fred Fish collection will continue..."**

## RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a 'value for money' rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a 'program rating', which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.

# Software for free

**In this month's round-up of budget-priced programs, Ian Wrigley tests fifteen of the best new disks around. Plus the latest PD news: could this really be the end of the line for Fred Fish?**

### BEGINNERS

#### What is PD?

PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software is only one branch of this area; the other main one is shareware.

Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual. Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her work.

The third branch of software that we cover here is called

### BEGINNERS START HERE

### BEGINNERS

#### licenseware.

This is a form of shareware which is licensed to one (or more) PD libraries. In essence, when you buy a licenseware program you are buying shareware and paying the license fee at the same time. For this reason, you should treat any licenseware that you buy exactly as you would treat a piece of full-price commercial software – don't pass it around to your friends. You've only bought the right to use it yourself.

#### Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, or that you make sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.



subscribers back up to more reasonable levels. Thanks.

"Fred Fish, 1835 E Belmont Drive, Tempe, AZ 85284, USA. Phone 602-491-0048."

It would be a real shame if Fred was forced to close down his library – he's done so much good for the Amiga

at any time as the program sits in the background.

Finally, the source code – in C – is included, so if you're a budding programmer you can

even seem to have problems when you give it unpleasant curves to deal with – if the area comes out as 'infinity', the program doesn't crash, but merely reports that it's '++++++'.

Other data which you can get from a curve includes any zero points, turning points and maxima and minima. For further customising, the maximum and minimum values of x can be set, as can things like the colours used for the graph, the screen mode, and so on.

The program will only accept one variable – x – but it has a reasonable range of built-in mathematical functions which can be accessed, including the standard trigonometric ones like sin, cos, tan, and their inverses, plus sinh, cosh and tanh, exp, sqr, and more.

All in all, this will be a great program for any maths students who want to check their results, and is ideal for anyone who needs to plot mathematical curves but who doesn't have the time or patience (or, like me, the ability to draw a smooth curve or use one of those bendy ruler things properly!). My only criticism is that in the English documentation, Henning says that "because *Kurve* is so easy and

faster version for machines with a maths co-processor.

**Program rating .....9/10**

## DFADDRESS

**Fish disk 781**

Yes, *DFAddress* is another address book utility – even though the introductory documentation says that it's "NOT just another address utility." However, the program does have a couple of interesting features which may make it worth a look if you're still searching for the perfect 'little black book' program.

First, the program is actually a commodity, so it can run in the background and be invoked by a hot-key. Second, it can display an address in two different ways; one contains just the name, town, phone and E-mail addresses of a record, the other shows the full details. This is probably reasonable in that often you only want a person's phone number, but displaying three E-mail addresses and not the fax number? I suspect that the author, Dirk Federlein, lives in a far more electronic world than most of the rest of us!

Creating new records is easy, although the format is a little odd: there's a field called 'address' which seems to have no use, only one line for the street address (so things like 'Unit 11/Gibbon Business Estate' are tricky to enter) and the postcode comes before the city name. There's a field for the person's birthday, but only one line for comments. And so on – not at all flexible enough, really.

The program does have a couple of interesting – although not particularly useful – options, such as the ability to dial the phone number via a modem connected to the Amiga's serial port (does anyone actually use this facility in address books?), and the option to auto-enter data into any of the fields (so if, for instance, almost all your contacts lived in Aberdeen you could have that automatically entered, and then edit it only when necessary).

The search features are probably some of the most sophisticated I've come across – you can exclude as well as include specified patterns, for instance – but to be honest, all you're ever likely to want to do is find a person's record quickly – not do convoluted, Unix-style searches of your address database.

continued on page 110

community in terms of making sure that shareware and PD is widely distributed. If you're a member of a user group – or even a PD library – I urge you to think about whether your organisation could subscribe, rather than getting disks second-hand. That way you'll get all the latest PD as soon as it appears – and you'll help make sure that the Fred Fish library lives on.

Well, it's in your hands. In the meantime, let's take a look at just fifteen good reasons why Fred Fish should continue...

## AUTOSAVE

**Fish disk 771**

This is a simple little program which has one task in life – to call an ARexx script at regular intervals. The author, Michael Warner, wrote it to implement an auto-save feature, although it could be used for

reverse-engineer this to see how Michael has written *AutoSave* to use and interrupt the timer device.

To sum up: if you can program in ARexx, and you have an ARexx-compatible program, *AutoSave* is a neat and efficient way of getting that program to automatically save your work for you.

**Program rating .....8/10**

The screenshot shows a window titled 'Full address...' with various fields for an address book entry. The fields are filled with the following information:

- Address: (empty)
- First: Amiga
- Name: Shopper
- Street/No.: 30 Monmouth Street
- ZIP/PC: BA1 2BW
- City: Bath
- Country: (empty)
- Birthday: (empty)
- Phone: 0225 442244
- EMAIL1: amshopper@cix.compulink.
- EMAIL2: (empty)
- EMAIL3: (empty)
- Fax: 0225 446019
- Comment: Cliff Ramshaw -- Editor

At the bottom of the window are buttons for 'First', 'Prev Sel.', 'Prev', 'Next', 'Next Sel.', 'Last', 'Edit', and 'Ok'.

*DFAddress* claims that it's "not just another address book utility". But apart from a couple of interesting features, that's all it looks like to me

## KURVE 2.001

**Fish disk 778**

*Kurve* is a function plotting tool written by Henning Rink – German authors seem to abound this month. It's fast, and easy to use – but it's also rather powerful. Just give the program a mathematical function, and it will plot the graph for you. But that's not all it does – it will also, on request, plot the first and second differentials of the function, and will numerically integrate the function to provide a reasonable estimation of the area under the curve. It doesn't

intuitive to handle, I wrote only a short documentation. If you want more info about the program refer to the [German documentation], which includes a complete description of all program features."

Fine, but if you don't read German you may find yourself puzzling over some aspects. Still, despite that this program is one which will soon become popular with any Amiga-using scientists and mathematicians out there. Its speed alone sets it streets ahead of the competition. And if you send the author DM20, he'll send you an even

**"You can set it to execute the script every 1, 5, 15 or 60 minutes"**

whatever you want. Basically, to use it you must write your ARexx script (what do you mean, you can't program in ARexx – haven't you been following our tutorial series?), and use the icon tooltypes to specify where your script is saved. You can set it to execute the script every 1, 5, 15 or 60 minutes – a window allows you to switch between these



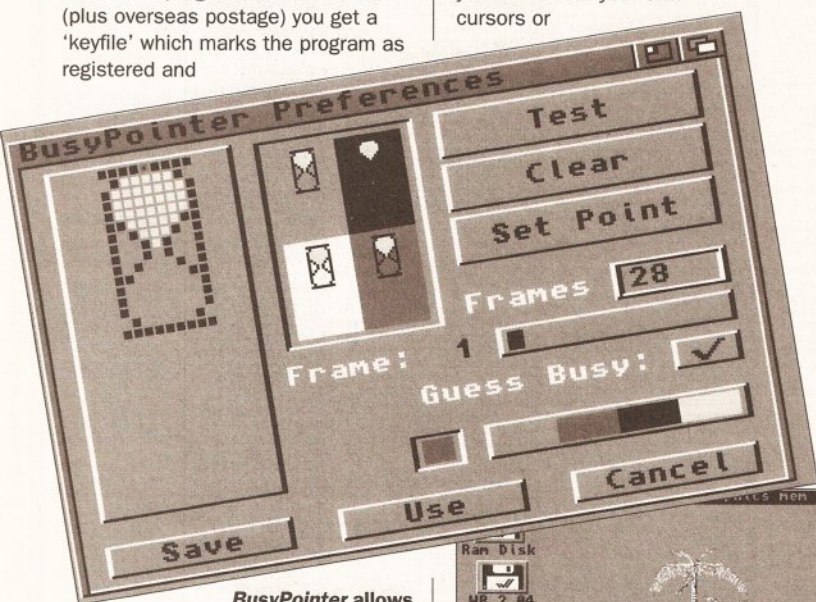




continued from page 108

On the whole, unfortunately, *DFAAddress* just isn't that good. It's a shareware program, and for DM15 (plus overseas postage) you get a 'keyfile' which marks the program as registered and

four preset pointers are provided – the standard clock with one or two animated hands, an hourglass and the Workbench 1.3 'Zzz' bubble – but you can create your own cursors or



**BusyPointer** allows you to create animated 'busy' cursors – far more interesting than the Amiga's boring static watch face

means that you can save preferences, choose the location of your address file and the like. But there are better, more flexible programs of this type knocking around. Its benefits, such as fields for E-mail addresses and the ability to invoke it with a hot-key, don't outweigh the disadvantages of an inflexible format and a feeling of unwieldiness about the whole thing.

**Program rating** .....6/10

## NICKPREFS

**Fish disk 780**

This is an enhancement to Workbench 2.0's *IPrefs* which adds three new preferences: *WBPicture*, *BusyPointer* and *Floppy*. *WBPicture* allows you to select any IFF picture to replace the original Workbench pattern; *BusyPointer* allows you to edit the cursor which will be displayed when

a program is working; and *Floppy* can be used to suppress the empty drive clicking noise and also to mess about with step, settle and calibrate timings (don't try this at home, kids).

All three Prefs controllers are easy and clear to use, and all three are well worth having. It's nice to see a Workbench screen with a picture instead of the normal grey pattern, and *BusyPointer* is really very neat;

load IFF brushes or Animbrushes if you prefer.

I'm less convinced about *Floppy*; sure, stopping the drive clicking is nice, but being able to alter scary things like drive timings isn't something that I think is a good thing. On the other hand, one of the adjustable parameters is the maximum number of times that the drive will attempt to read data from a disk before it returns an error, so if

you're having trouble reading a slightly corrupt disk, it's worth increasing this value for a last-ditch attempt to get at your data. Similarly, if you decrease this value from its normal 10, you'll be warned far sooner if a disk is

getting less reliable. The author claims to be using a setting for this of zero, which means that the drive will only try to read the data once, with no problems.

All in all, these are three neat additions to the basic Workbench Preferences drawer, and they'll certainly be staying on my hard drive.

**Program(s) rating** .....9/10

## LS

**Fish disk 773**

If you're a Unix user, *ls* will be familiar to you: it's a directory listing utility similar to, although much more powerful than, the Amiga's 'dir' command. This version, written by Loren Rittle, is based on Justin McCormick's earlier Amiga *ls* utility, and includes a large number of enhancements and bug-fixes.

You can use the program as a direct replacement for 'dir'; it can be placed in your 'c:' directory and made resident if you require. To give you some idea of the command's versatility, some of the options include: list all entries; show filenotes; sort by extension; long listing; sort by date; display entries across a line; format output; ignore



Also part of the *NickPrefs* collection on Fish disk 780: *WBPicture*, one of three new Preferences managers to liven up your Workbench

files corresponding to a given pattern; show full pathnames; and, finally, list recursively. What more could you possibly ask for?

Unix fans will already have their chequebooks out in an attempt to make their Amiga look more like the box at work. To be honest, the rest of us probably won't use a tenth of the features available with *ls* – but they're there if you want them, and the program's only 12K in size. There's even a special '030 version included if you need it.

**Program rating** .....7/10

## EXTRA COMMANDS

**Fish disk 774**

Talking of commands written to replace or augment those supplied with AmigaDOS, Torsten Poulin has written a range of extra commands for anyone using AmigaDOS 2.04 (unfortunately they won't work on earlier systems). Like the *ls* utility reviewed above, these too are mainly based on Unix commands.

Torsten's documentation says that these new commands should be considered as beta versions, since he hasn't had time to fix all the bugs, but he documents any problems that he's come across,

and many of the commands are useful enough that you can live with the occasional glitch. Here's a brief run-down of the utilities that are on the disk:

- **Common.** Reads two files and produces a three-column output: lines which only appear in the first file, lines only in the second file and lines in both files.
- **Concat.** Concatenates (joins) two or more files together.
- **Count.** Counts lines, words and characters in specified files.
- **DirTree.** Displays disk directories and sub-directories on-screen in a graphical format.
- **Head.** Prints out the first few lines of specified files – useful if you're not sure which of a number of files is the one you want.
- **Lower.** Executes a command line at a specified priority – for use when you're multitasking programs or commands.
- **Split.** Splits a file into separate parts – either giving each part a specified number of characters, or splitting the file into a predetermined number of parts.
- **Tee.** Er... according to the documentation, this "transcribes the default input to the default output and makes copies in the files specified by the TO option." Work it out if you can!

**"It seems that more and more extra CLI commands are appearing now"**

- **Timecom.** Executes a command line and then prints the time taken to perform that execution.
- **Unique.** Reports repeated lines in a file.

These are all, to a greater or lesser extent, useful commands, and Torsten is to be congratulated for writing them. He includes full source code for each command, so you can modify them if you happen to have the inclination, and asks only that you send him bug reports and comments on the code.

It seems that more and more extra CLI commands are appearing now, and the Amiga's CLI is becoming more and more powerful as a result. This selection certainly adds a number of useful features, and can be highly recommended.

**Program(s) rating** .....9/10

continued on page 112



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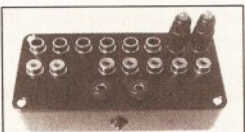
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continued from page 110

## TWILIGHTZONE

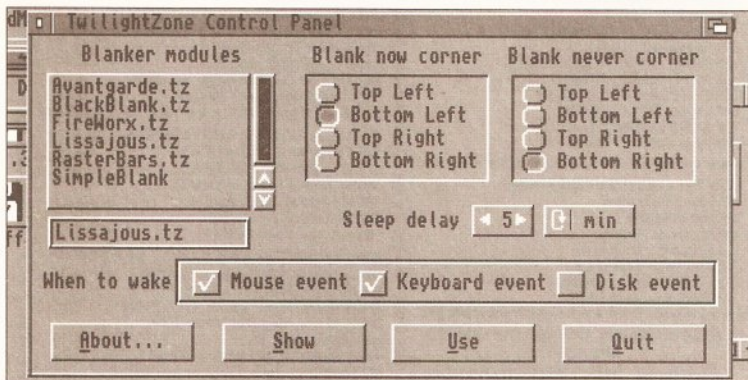
Fish disk 782

If you like screen savers, you must get hold of a copy of *TwilightZone*, a free modular screen blanker written by Rainer Koppler. It's the nearest thing to the popular Mac screensaver *After Dark* that I've seen, and it really is quite excellent.

Two versions of the program come on the disk, one for OS 1.3 users and one for those of us with

in the 'never blank' corner will make sure that your screen display isn't interrupted. There is also, of course, an option to engage the screen blanker after a set amount of time when no action has taken place.

You can specify when the blanker 'wakes up' – there are choices for moving the mouse, hitting a key or inserting a disk, or any combination of these. Finally, a 'Show' button demonstrates the selected blanking module without you having to close the Control Panel. Once running, the Control Panel can be brought up by



The *TwilightZone* control panel: at last, a really good screen saver for the Amiga – and, to top it all, it's absolutely free!

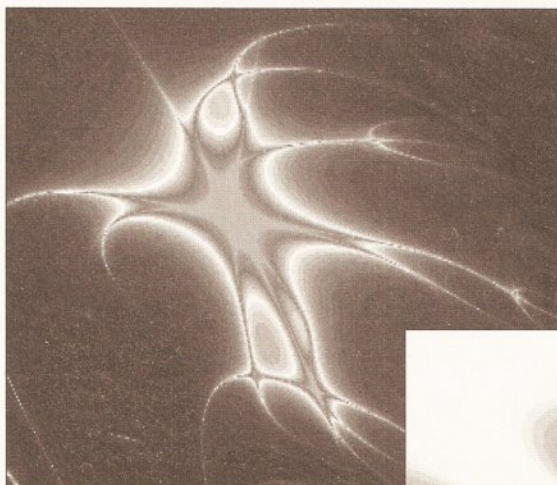
OS 2.04 (or presumably higher, though I couldn't test this). Although version 2.0 isn't yet a commodity, the author says that he's going to implement this as soon as possible.

Installation is a simple matter of copying the files to your hard disk (or startup floppy). There is an auto-install icon supplied, but it wouldn't work on my Amiga. Still, all you have to do is copy one library to your LIBS: directory and the main program plus modules to your hard disk, so it isn't too much of a problem.

The idea of the program is that you can choose from a variety of different 'modules' to use when your screen blanks. This selection is done from a 'control panel' which demonstrates that Rainer has borrowed ideas from the Mac's user interface in general, and modular

pressing the **Right-Amiga, Right-shift, Escape** key combination.

The supplied modules are reasonable, and one in particular – *Lissajous* – is quite stunning. This displays a number of coloured,



Part of Lyapunov space – the program's author calls this one 'spider'... and on the right: 'metal'

shaded balls bouncing around the screen in a variety of shapes.

The manual for *TwilightZone* includes a section on how to write your own add-in modules. You'll need to be adept at assembly language programming to do this, but hopefully this means we'll see the release of a number of extra modules in the near future from other programmers as well as Rainer.

There are those (normally including me) who say that screen savers are a waste of time and processing power – if you're going to

leave your computer on for a considerable length of time, turn your monitor brightness down or switch it off altogether. However, I'm prepared to make an exception for *TwilightZone* – which is an exceptional program, and comes highly recommended.

Program rating .....10/10

## LYAPUNOVIA

Fish disk 784

Lyapunov space is a mathematical space named, according to author Jesper Juul, after Russian mathematician Aleksandr M Lyapunov. "If the Mandelbrot set is the most complex object in mathematics," says Juul, "Lyapunov space must be the juiciest, spiciest and most outrageous object ever found within numbers." He then goes on to describe (roughly) what Lyapunov space actually is, and what its

differences and similarities to the Mandelbrot and Julia sets are.

The program itself, as you'd expect, generates images in this space. It does so fairly quickly,

**"the juiciest, spiciest and most outrageous object ever found..."**

although obviously that depends on the complexity of the image and number of colours that you want to use, and will allow you to zoom in and out from an image. There's support for up to 32 colours and several

some idea of just how different and exciting Lyapunov space is.

This program is shareware – the author requests \$15 or DM25. If you're interested in the odder aspects of mathematics and stuff, this should be a small price to pay for what is, I believe, the first Amiga program to explore this particular subset of maths. It certainly makes a change from all those bloody Mandelbrot programs!

Program rating .....9/10

## EGOMOUSE

Fish disk 778

This is a hack by BJ Lehahn which makes your mouse pointer turn towards the direction that you move

your mouse. Move it down the screen and the pointer turns downwards. Move it to the right and the cursor turns right... you get the idea.

According to Fred Fish's contents list, this is a popular hack on the

Macintosh; well, it's

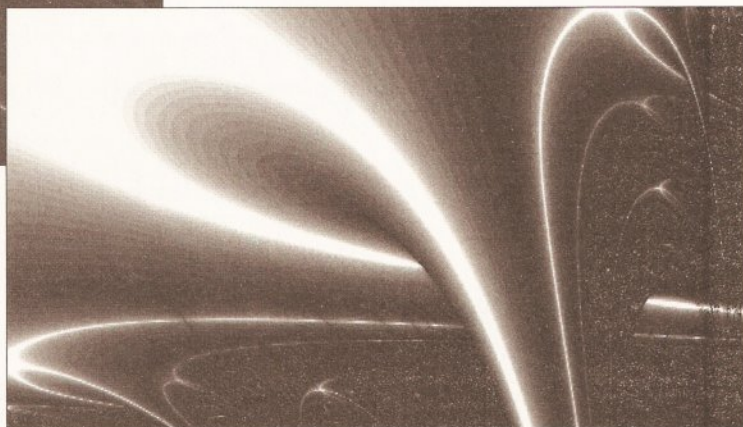
not something I've come across on that machine – and for good reason. It's incredibly irritating after the first 'wow, that's cute' reaction – for some reason it makes accurately clicking on objects far more difficult than usual. Still, it works, and some people may find it fun – just not me.

Program rating .....3/10

## WFILE

Fish disk 776

If you find yourself passing Amiga word processor files over to people using PCs, or if you receive lots of PC



different pre-set palettes, which are editable. The palettes can also be set to cycle, which shows off the images to startling effect.

A number of sample sets of co-ordinates are supplied, along with a couple of IFF images – which are shown here. They should give you

(or Mac, or even Unix) files which you want to use on your Amiga, *WFile* could be the answer to your prayers.

The problem with word processor files from other computer systems is that there are often extraneous characters in the file – for example, you may find that there is a carriage

**"You can choose from a variety of different 'modules' to use..."**

Mac screensavers in particular. The names of the supplied modules are displayed in a scrolling window – just click on one to select it. There are options for 'blank now' and 'blank never' corners of the screen – just move the mouse to the 'blank now' corner and the screen blanker will cut in automatically, while putting it



return character at the end of each line, which you have to strip out in order for your word processor to wrap lines correctly. Or perhaps, rather than tabs, the other system has put in eight spaces instead. Unless you have a utility which corrects this sort of thing, you can sometimes find yourself spending hours correcting the problems; *WFile* is just the utility to prevent this.

*WFile* is invoked from the Shell, and offers the following options:

- Expand tabs to multiple spaces.
- Shrink multiple spaces to a tab.
- Map a character (such as a foreign letter) to another one.
- Add or strip carriage return codes from the end of each line.
- Concatenate lines.

The options are invoked and controlled by the use of parameters following the 'wfile' command. However, there are six 'templates' already built in to the program, for things such as Amiga to IBM, Amiga to Unix and Unix to IBM conversion. Furthermore, you can create a plain text file with controlling parameters of your own choosing, and then tell *WFile* to use that file as a template.

Once you've got the hang of the parameters – they are all explained in the doc file provided, but the author's German to English translation sometimes makes the descriptions a little hard to follow – *WFile* will save you loads of time. It's certainly worth checking out.

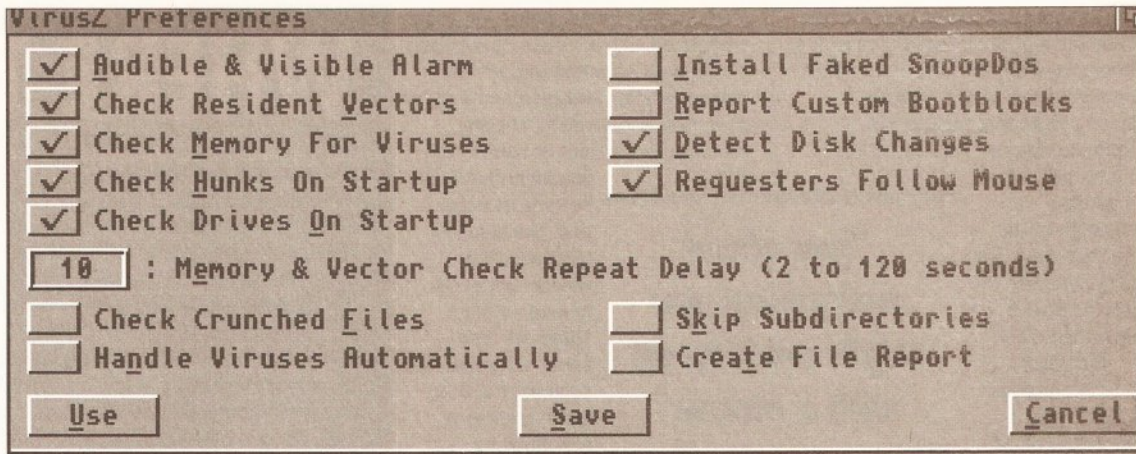
Program rating .....7/10

### MACRO 1.0

Fish disk 786

This is another example of a small, useful program that performs a simple task with no fuss. Author Piero Filippin has written this small macro recording and playback program for anyone whose favourite word processor, comms package or whatever doesn't have a built-in macro recorder. Once run from the Shell it creates a tiny title bar to remind you that it's there, and leaves you to get on with your work. To record keypresses (up to 1,000), hit **Left-Shift, Left-Alt, Control** [. When you've finished typing, hit the same key combination but with the closing square bracket, ]. Then to insert those characters just place the cursor wherever you want (including in a different window) and hit **Left-Shift, Left-Alt, Control** i. And that's

**"every Amiga owner should have at least one anti-virus program"**



Keep those nasty viruses at bay with *Lemsip*... er, I mean *VirusZ* of course

all there is to it. The program doesn't insert the characters incredibly fast, but it works and doesn't seem to cause any crashes. The only complaint I have is that it doesn't seem possible to quit the program without re-booting.

Program rating .....7/10

### VIRUSZ

Fish disk 786

Viruses are a fact of life, and every Amiga owner should have at least one anti-virus program. It's only when your machine becomes infected and you lose months of work that you realise just what you'd like to do to the people who write these vicious little programs, but until you actually get in a room alone with a big stick and one of these cretins, a program like *VirusZ* is probably the best you can do.

This release (2.27) recognises 196 bootblock viruses, 316 custom bootblocks and 76 file viruses. Note, though, that by the time you read this the program may have been updated to a later version – this will happen if any new viruses are discovered. So your best bet is to get hold of the program from a user group or PD library and specify that you need the latest version – not necessarily the version on this disk. However, you certainly should receive at least version 2.27 – complain if it's any earlier than that, because it may miss newer viruses.

The program sits in the background, and checks every disk that's inserted to see if it has a bootblock virus. It also scans memory when it's loaded to make sure that there are no viruses resident. This check is repeated at regular intervals – the default is every 10 seconds. There are other, more sophisticated options also

available, and the upshot is that if you've got an infected disk or program, *VirusZ* should catch it before it has time to do anything really nasty to your data.

*VirusZ* is shareware: the author, Georg Hörmann, requests that you send him DM10. As he says, at the moment he's spent more than he's received, so paying your fee will go a good way to ensuring that he keeps updating what is considered to be one of the better virus checkers.

Program rating .....9/10

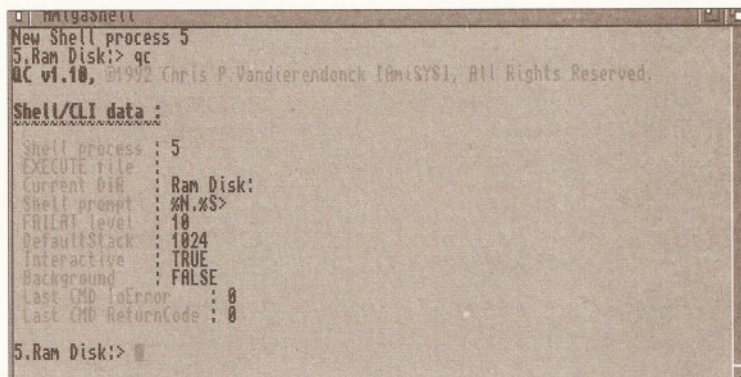
DefaultStack was, this is the utility for you. If, like me, you're perfectly happy remaining ignorant about these facts, pass on...

Program rating .....1/10 or 10/10 (depending on how curious you are about the Shell's internal workings!)

### VIEWTEK

Fish disk 787

There are plenty of picture viewers around, but *Viewtek*, a freeware program from Thomas Krehbiel, has



QC: Everything you wanted to know about the Shell but were afraid to ask?

### QC

Fish disk 788

There is presumably a reason for this CLI command – I just can't think of one right now. QC is a PD utility by Chris Vandierendonck which displays

rather more features than most. Not only will it display the usual IFF and ANIM files, but it also supports GIFs and even JPEG-encoded files. A full feature list reads something like this:

- Supports 24-bit ILBMs.
- Shows most GIF-format images.
- Shows most JFIF-format JPEG images.
- Shows most ANIM Op-5 format animations, with support for different palettes for each frame.
- Supports SHAM, CTBL and PCHG .
- Supports all ECS/AGA display modes.

The disk also includes a stripped-down version of the program which doesn't support GIFs or JPEG images, for those who are tight on disk space, and a version which supports true 24-bit display on GVP's Impact Vision 24 board.

**"Viewtek... also supports GIFs and even JPEG-encoded files"**

information about your Shell such as its process number, current directory and prompt, FAILAT level and so on. If you've ever found yourself wondering just what size that



The program can be run from the Workbench or Shell, and boots with a Requester from which you can select the file to view. If the program doesn't think that the file is a legitimate image, it will just return you to the Requester – a message telling you that there was a problem with the file would have been a bit nicer.

But really, there's no better option – this is one of the most comprehensive file viewers available. Now if it just supported PowerPacker images...

**Program rating** .....9/10

**QMOUSE**  
**Fish disk 789**

In *QMouse*'s 3,000 or so bytes author Dan Babcock has managed to

cram just about everything you might want to do with a mouse. It supports things such as automatic window activation after **Amiga-M** and **Amiga-N**, mouse acceleration, clicking windows to the front or back when

you hit both mouse buttons at once, and 'SunMouse' (activates the window under the mouse pointer). There are also some extra features such as 'PopCLI', which creates a new Shell on demand.

You'll probably find that you don't use many of these features at all, but *QMouse* is worth getting even if you only use a couple. The advantage of having all the functions in one program is that there's far less danger of crashes due to programs clashing with each other.

**Program rating** .....9/10

*"just about everything you might want to do with a mouse"*

# WHERE TO GET IT

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect, and you'll have to pay phone charges (and sometimes a connection fee to the bulletin board as well).

There are a growing number of bulletin boards with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has Amiga software but also contains conference and file areas on a wide range of subjects. Many of the *Amiga Shopper* writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a bulletin board, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and you'll find a comprehensive list of names and addresses at the end of this article. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between the companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and there are totally incompetent (dis)organisations which charge more than twice that.

# UK PD HOUSES

**Amiganuts United**  
169 Dale Valley Road  
Hollybrook  
Southampton

**AMOS PD**  
1 Penmynydd Road  
Penlan  
Swansea  
SA5 7EH

**Anglia PDL**  
115 Ranelagh  
Felixstowe  
Suffolk  
IP11 7HU  
☎ 0394 283494

**Blitterchips**  
Cliffe House  
Primrose Street  
Keighley  
BD21 4NN  
☎ 0535 667469

**Crazy Joe's**  
145 Effingham Street  
Rotherham  
South Yorks  
S65 1BL  
☎ 0709 829286

**Deltrax PD**  
36 Bodelwyddan Ave  
Old Colwyn

Clwyd LL29 9NP  
☎ 0492 515981

**Deja Vu**  
7 Hollinbrook  
Beech Hill  
Wigan WN6 7SG  
☎ 0942 495261

**Essex Computer Systems**  
118 Middle Crockerford  
Basildon  
Essex  
SS16 4JA  
☎ 0268 553963

**George Thompson Services**  
Cucumber Hall Farm  
Cucumber Lane  
Essendon  
Herts  
AL9 6JB  
☎ 0707 664 654

**ICPUG**  
PO Box 1309  
London  
N3 2UT  
☎ 081-346 0050

**NBS**  
1 Chain Lane  
Newport  
Isle Of Wight PO30 5QA  
☎ 0983 529594

**PD Soft**  
1 Bryant Ave  
Southend-on-Sea  
Essex  
SS1 2YD  
☎ 0702 466933

**Pentire PD**  
10a Hag Hill Lane  
Taplow  
Maidenhead  
Berks SL6 0JH  
☎ 0628 666641

**Riverdene PDL**  
30a School Road  
Tilehurst  
Reading  
Berkshire RG3 5AN  
☎ 0734 452416

**Telescan Computer Services**  
Handsworth Road  
Blackpool FY5 1SB  
☎ 0253 22296

**Sector 16**  
160 Hollow Way  
Cowley  
Oxford  
☎ 0865 774472

**Seventeen Bit Software**  
PO Box 97  
Wakefield

West Yorks  
WF1 1XX  
☎ 0924 366982

**Software Expressions**  
Unit 4  
44 Beaulieu Road  
Southville  
Bristol BS3 1PY  
☎ 0272 639593

**Softville**  
Unit 5, Stratfield Park  
Elettra Avenue  
Waterlooville  
Hants PO7 7XN  
☎ 0705 266509

**Startronics**  
4 Arnold Drive  
Droylsden  
Manchester M35 6RE  
☎ 061 370 9115

**Vally PD**  
PO Box 15  
Peterlee  
Co Durham SR8 1NZ  
☎ 091-587 1195

**Virus Free PD**  
31 Farringdon Road  
Swindon  
Wiltshire SN1 5AR  
☎ 0793 512321



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# PRODUCT LOCATOR

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Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. The Buyer's Guide will run each and every month and, as new products are released and others discontinued, we'll be updating it

accordingly. This month we bring you what is possibly the most comprehensive guide to public domain software for the Amiga owner. It may not include each and every PD product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest assured that all the major titles are here.

## BUSINESS SOFTWARE

Program	Library	Disk	Type	Issue	Rating
TextPlus 3.0	PDSOft	V261	Word processor	1	****
TextEngine 3.0	Digitz	277	Word processor	13	***
WordWright	PDSOft	V28	Word processor	13	****
AZSpell	Digitz	Utl277	Spell checker	13	****
PowerSnap	Fred Fish	542	Grab screen text as ASCII file	8	*****
UEdit	AmigaNuts	1162	Text editor	8	****
AmigaFox	Office Choice	U173	Combine text with graphics	8	**
AmiBase Pro 3	AmigaNuts	-	Powerful database	9	****
Liner	Fred Fish	285	Ideas processor like Flow	10	****
NewPRT	Digitz	149	Printer drivers for PageStream	10	****
PageStreamFonts	Digitz	149	Fonts for PageStream	10	*****
EasyBanker	GTS	Home2	Home finance program	10	****
HomeHelp	GTS	Home1	Computerised grocery lists	10	****
I-Man	GTS	Home2	Inventory list management	10	***
MultiPlot	Fred Fish	467	Data graphing program	7	****
Power Planner	Deja Vu	Licenseware	Diary/telephone book	15	***
Power Base	Deja Vu	Licenseware	Database	15	*****
CruiseWord	PD Majik	-	Word processor	16	**
AmiCash	PS Soft	V630	Home accounts	16	***
Home Manager	PD Soft	V660	Personal organiser	16	*****
Word Power	Deja Vu	Licenseware	Spell checker	17	****
WBase	Anglia PD	U4015	Pop up Workbench database	18	**
PowerText	Deja Vu	Licenseware	Word processor	18	*****
Account Master	Various	-	Home accounts program	19	****
AmigaDex	PD Soft	V757	Pop up address book	19	*****
Will&Testament	PD Soft	V706	Template for wills	19	*****
Forms Really Unlimited	PD Soft	V782	Create your own business forms	21	*
Philo	Startronics	N/A	Databases for beginners	21	*
Atbl	Fred Fish	Fish 746	Unix-like table formatting utility	22	****
PaperBack!	Fred Fish	Fish 749	Create printed booklets with ease	22	*****
Epoch	NBS	U726	Pop up address book and calendar	22	**
BuddBase 1	Deja Vu	L/28	Powerful database program	22	*****
JCGraph Demo	Fred Fish	Fish 760	Demo of shareware graph program	23	*****
Stock Control 1.0	Deja Vu	L/111	Powerful stock control utility	23	****

## MUSIC UTILITIES

Nutracker Suite	17-Bit Software	N/A	Tchaikovsky's Nutcracker suite	21	****
CDTV Player	Fred Fish	Fish 759	Play Audio CDs from WB on A570	23	*****
MED 3.11	AmigaNuts	973	Sound Tracker	1	*****
Module Processor	AmigaNuts	864	Convert modules to executable	1	***
Rippers Disk	17Bit	1055	Rip modules from memory	5	****
Sound Ed	Fred Fish	486	Sample editor	5	****
Module Master	TBAG	58	Play modules in various formats	9	****
K1 Editor	Fred Fish	332	Patch editor for Kawaii K1	10	*****
CZED	Fred Fish	223	Patch editor for Casio synths	10	*****
Desktop Harp	Various	-	Collection of tunes	18	*****

## EMULATORS

IBEM	VirusFree	1485	PC compatibles	3	****
A64	AmigaNuts	1030	Commodore 64	3	*****
ST Emulator	Digitz	Utl149	Atari ST	15	***
QL Emulator	AmigaNuts	1030	Sinclair QL	3	***
ZX Emulator	AmigaNuts	1030	ZX Spectrum	3	****

## VARIOUS UTILITIES

WordFinder-Plus	Virus Free PD	Licenseware	Crossword puzzle solver	21	****
File & HD Utils 3	PD Soft	V815	Various file and hard disk utilities	21	****
FindIt	Fred Fish	Fish 731	Search for named files on any disk	22	****
Fontviewer	Fred Fish	Fish 732	Keep track of all your bitmapped fonts	22	****
Megad 2.0	Fred Fish	Fish 736	Brilliant SID-like directory utility	22	*****
CFX	Fred Fish	Fish 750	File type identifier	22	*****
Pools Tools	NBS	U725	Pools predictor	22	***
Boot Logo	Fred Fish	Fish 754	Display picture during boot up	23	****
PopUpMenu	Fred Fish	Fish 756	Modified Workbench menus	23	****
GeoTime	Fred Fish	Fish 758	World Time Zone Display	23	*
ABackUp	Fred Fish	Fish 759	Hard Disk backup utility	23	****



# PRODUCT LOCATOR

ARestaure	Fred Fish	Fish 760	Restore deleted files	23	*****
BootJob	Fred Fish	Fish 760	Store game bootblocks on disk	23	**
S-Text	Fred Fish	Fish 760	Create stand-alone text files!	23	**
Assassins Handy Tools	Aardvark PD	U186-188	Three disks of handy utilities	23	***
A-Gene	AmigaNuts	933	Genealogy program	1	*****
Command.COM	17Bit	866	CLI commands in RAM	2	***
MessySID 2	PDSOft	V490	Access PC disks with ease	13	*****
Elements	Fred Fish	593	Periodic table of elements	13	****
Cass 1.1	Fred Fish	579	Make your own cassette covers	13	***
Badger	Fred Fish	543	Event scheduler	13	***
School TimeTable	AmigaNuts	1100	Generate school timetables	5	***
Arq	CIX Download	-	Improved system requesters	8	*****
LC24-200 Fonts	NBS	L503	Fonts for Star printers	8	***
Menu Runner	AmigaNuts	1024	Run programs from menu	8	***
ButExchange	Fred Fish	494	Reverse mouse buttons	9	****
DeafLab	Fred Fish	494	Sign language utility	9	***
PWKeys	Fred Fish	494	Manipulate windows with hotkeys	9	***
InputLock	Fred Fish	494	Turn off mouse and keyboard	9	*****
RunMe	AmigaNuts	1186	Run programs from menu	9	*****
Hard Drive Special	GTS	-	Collection of hard drive utils	9	*****
ScreenMOD	TBAG	58	Modify screens and windows	9	***
Words 3	AmigaNuts	-	Solve anagrams	9	***
ClockTick	TBAG	58	2.0-like clock mouse pointer	9	****
FileSearch	Fred Fish	531	Find files on a hard disk	11	***
Format 1.1	Fred Fish	535	Replacement disk formatter	11	*****
PowerPacker Utils	Fred Fish	542	Utilities for PowerPacker	11	***
LabelMaker	Fred Fish	548	Create disk labels	11	***
ToolsDemon	Fred Fish	561	Run programs for 2.0 Tools menu	11	****
Filer	Fred Fish	562	SID clone for Workbench 2.0	11	****
AWP	Fred Fish	554	Animate WB2.0 clock pointer	11	*****
RMBSHift	Fred Fish	547	Select multiple icons	11	****
Smart Icon	Fred Fish	316	Iconifies windows	10	***
Flash Disk	GTS	Utils2	Disk optimiser	10	****
Snap 1.4	Fred Fish	326	Grab screen text into clipboard	10	*****
SysInfo	Fred Fish	571	System information program	11	*****
MKSLens	Fred Fish	574	Magnify area of screen	11	***
Font Manager	Digitz	149	Manage your bitmap fonts	10	****
Recover	Digitz	149	Rescue files from corrupt disks	10	**
Track Display	GTS	Utils1	Shows position of drive heads	10	***
FastDiskII	GTS	Utils1	Disk optimiser	10	***
FileMaster	GTS	Utils1	Binary file editor	10	*****
DiskSpeed	GTS	Utils1	Disk drive benchmark program	10	*****
Formatter	GTS	Utils1	Replacement disk formatter	10	***
SetNoClick	GTS	Utils1	Turn off annoying drive click	10	***
DevRen	GTS	Utils1	Rename devices including DFO	10	****
LockDevice	GTS	Utils1	Better AmigaDOS 'Lock' command	10	*****
Label Print	Fred Fish	227	Disk label printer	10	***
Banner	TBAG	52	Print huge banners	10	****
Avail Mem	Fred Fish	285	Graphical memory monitor	10	***
DCopy	AmigaNuts	700	Disk copier	10	*****
MessyDOS	NBS	U619	Read and write PC disks	6	*****
Master Virus Killer	AmigaNuts	971	Virus killer	1	****
Imploder	Fred Fish	422	File compressor	7	***
ARTM	17Bit	1274	System monitor	7	*****
File and HD management	PD Soft	V573	Hard drive utilities	15	*****
Sid 2	17Bit	-	Directory utility	16	*****
File and HD management 2	PD Soft	V575	More hard drive utilities	16	***
Outline fonts	George Thompson	-	For ProPage and PageStream	16	*****
Electronic baby book	PD Soft	V658	Record your baby's details	16	****
Astro 22	PD Soft	V685	Astrology program	17	****
Touch typing tutor	NBS	CLU03	Teach yourself touch typing	17	****
Magnetic Pages	PD Soft	V688	Create your own disk magazine	17	*****
HAM Radio	Aardvark PD	-	HAM radio utilities	18	*****
MegaStation	Five Star PD	U195	More CLI commands	18	***
C Commands	PD Soft	V586	Even more CLI commands	18	***
Morse Tutor	Deja Vu	L101	Teach yourself Morse Code	19	*****
Minix Demo	PD Soft	V711	Demo of Unix-like OS	19	*****
Printer Drivers	PD Soft	V724	Star and Canon printer drivers	19	*****
Icon Mania	PD Soft	V730	Lots of new icons	19	**
Anti-Virus	Soft Expression	U155	Kill those viruses	19	*****
CG Fonts	PD Soft	V713	Lots of Compugraphic fonts	19	****
X-Stitch	Deja Vu	Licenseware	Pics to knitting patterns	19	****
Distance	Deja Vu	Licenseware	HAM radio utility	20	****
Main Event	Soft Expression	U149	Event scheduler	20	****
Disk Manager 2	Various	-	Disk cataloguing program	20	*****
VCR Tape Filer	Fred Fish	721	Organise your video collection	20	***



# PRODUCT LOCATOR

## PRODUCT LOCATOR

AniMan	Fred Fish	722	Voice control your Amiga	20	***
DiskMate	Fred Fish	723	Disk copier	20	****
BackUp	Fred Fish	724	Hard disk back-up utility	20	****
HAMLab 2 Demo	Fred Fish	726	Powerful image processor	20	****

### COMMS UTILITIES

LHA 1.11	Fred Fish	593	Archiving utility	13	****
Phone Line Watcher	TBAG	58	Keep track of phone bill	9	****
Term 1.8A	Fred Fish	534	Terminal Program for WB2.0	11	****
NComm	17Bit	1275	Terminal Program	7	****
BBBBS	Fred Fish	729	Bulletin Board System	20	****

### PROGRAMMING UTILITIES

GadTool Box	Fred Fish	Fish 731	Create Intuition font ends	22	****
ICalc	Fred Fish	Fish 742	Brilliant Shell-based calculator	22	****
MegaEd	Fred Fish	Fish 743	Powerful text editor	22	****
Stripit	Fred Fish	Fish 750	Strip comments from ascii source code	22	****
DICE	Fred Fish	443	C Compiler	3	****
Copper Master	AmigaNuts	1083	Generate Copper Lists	5	***
BRef	Fred Fish	494	BASIC cross referencing utility	9	****
Power Logo	EdLib	24	Enhanced Logo Interpreter	9	***
MIDI Library	Fred Fish	227	Program MIDI applications	9	****
PCQ Pascal	AmigaNuts	1113	Pascal compiler	6	****
NorthC	AmigaNuts	1112	C Compiler	6	****
Acc Assembler	AmigaNuts	-	Fast Assembler	6	****
Remm and Rams	Deja Vu	Licenseware	Map editor and scroller utilities	17	***
Frac	AmigaNuts	1251	Adventure game creator	18	****
Map Editor	AmigaNuts	-	Map editor for AMOS	19	****
DPU	Fred Fish	721	Hex disk and file editor	20	****

### GRAPHICS UTILITIES

DPaint Tutorial	Soft Express	U160	Comprehensive DPaint tutorial	22	****
CMDemo	Fred Fish	Fish 757	Demo of ASDG's CineMorph	23	***
SpectraPaint	Slipped Disk	19	Paint package	3	****
Deluxe Draw	Slipped Disk	18	Paint package	3	**
AMOS Paint	Deja Vu	83	Paint package	3	***
HAMLab	AmigaNuts	1149	Image processing	3	**
3DFont	17Bit	1007	Text to Sculpt Object	3	***
SkyPaint	TBAG	37	Text-based graphics	3	***
SlideShow Kit	VirusFree	1465	Create your own slideshows	3	****
Mandel Mountains	Softville	751	Creates 3D Mandelbrots	5	****
3D Objects Disk 1	AmigaNuts	-	Collection of Sculpt Objects	8	****
PictSaver	Fred Fish	543	Grab screens in IFF Format	9	****
LandBuild	AmigaNuts	1190	Fractal landscape generator	9	**
Video Text Displayer	AmigaNuts	1199	Basic text scroller	9	***
Converters	17Bit	1221	Image conversion tools	9	***
Vector Designer	AmigaNuts	-	Vector graphics designer	9	**
Plasma	Fred Fish	573	Fast fractals program	11	***
BezSurf 2	Fred Fish	315	Create shaded 3D objects	10	***
DrawMap	Fred Fish	315	Generate maps of the world	10	***
Sprite Designer	AmigaNuts	1102	Create animated sprites	6	**
ImageLab	PDSOFT	V518	Image processing program	12	****
Desktop video pack 2	Anglia PD	-	Various DTV utilities inc titler	17	***
FracScape	Various	-	Fractal landscape generator	18	****

### EDUCATIONAL SOFTWARE

WarBook	Asgard Software	Freeware	History of World War 2	21	***
ChemBalance	Fred Fish	Fish 759	Balance chemical equations	23	****
Learn&Play	Riverdene	Mis637	Maths/Reflex/Logic	5	****
Simon	Deja Vu	APD135	Reflex/Memory	5	***
Space Maths	Deja Vu	APD135	Maths	5	****
TouchStones	Deja Vu	LPD18	Logic	5	****
Shapes	Riverdene	GAM907	Maths/Logic	5	****
Quingo	Deja Vu	LPD21	3 'R's	5	***
Treasure Search	Deja Vu	APD2	Maths/Logic	5	***
JigMania	Deja Vu	LPD13	Maths/Logic	5	****
Spell4Fun	AmigaNuts	1146	Spelling	9	****
Maths4Fun	AmigaNuts	1146	Maths	9	****
XTables	AmigaNuts	1146	Maths	9	****
Runes	DTP	OS125	Mystic runes explained	18	***
4 Stroke Engine	PD Soft	V738	Demonstrates 4 stroke engine	19	****
Complete Bible	PD Soft	V715-717	Complete Bible on three disks	19	****
Constellations	Astronomy News	-	Info on stellar constellations	20	***
Maths Reflex	Anglia PD	C728	Test your maths	20	****

FOR SUPPLIER INFORMATION ON ALL THE PRODUCTS LISTED ABOVE SEE UK PD HOUSES PAGE 114



# CITIZEN PRINTERS FROM SILICA SYSTEMS

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Next Day - Anywhere in the UK mainland
- **FREE STARTER KIT**  
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(including the dot matrix printer head)
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- **FREE HELPLINE**  
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- **FREE COLOUR KIT**  
With every Swift 9



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- 3 1/2" Disk with Amiga Print Manager (see right)
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- 100 Continuous Tractor Feed Address Labels
- 5 Continuous Envelopes on Tractor Feed

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For faster printing from your Amiga, with clearer images and more vibrant colours. Available free of charge as part of the Silica Printer Starter Kit. Features include:

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- Compatible with bottom and rear feed operation

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PRA 1215 1240/224/Swift 9/24 ..... £88.70  
PRA 1228 1240/224/Swift 9/24 ..... £42.00

## SERIAL INTERFACES

PRA 1189 1200+ ..... £56.45  
PRA 1209 Swift 9/9x/1240/224 ..... £32.25  
PRA 1709 Swift 24/24x/24e ..... £26.38

## 32K MEMORY EXPN

PRA 1753 1240/224/Swift 24 ..... £13.10

## PRINTER STAND

PRA 1242 1240/224/Swift 9/24 ..... £22.33  
PRA 1274 Swift 9x/24x ..... £30.66

## ORIGINAL RIBBONS

RIB 3520 1200/Swift 9 Black ..... £2.91  
RIB 3949 Swift 9x Black ..... £7.15  
RIB 3924 1240/Swift 24 Black ..... £4.70  
RIB 3936 224/Swift 9/24 Colour ..... £15.63  
RIB 3248 PN48 Single Strike ..... £3.61  
RIB 3348 PN48 Multi Strike ..... £3.61

## COLOUR KITS

PRA 1236 224/Swift 9/24x/200/240 ..... £35.25  
PRA 1240 Swift 9x/24x ..... £35.25

## PN48 ACCESSORIES

PRA 1148 PN48 Battery ..... £46.70  
PRA 1155 PN48 Cable Extn ..... £29.37  
PRA 1162 PN48 Car Adaptor ..... £16.80

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24 PIN 270 CPS 80 COLUMN



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**SWIFT 200**

- Citizen Swift 200 - 24 pin - 80 column
- 270cps SD (15cpi), 216 cps Draft, 72cps LQ
- 8K Printer Buffer (40K max) + 6 LQ Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360 dpi
- Epson, IBM, & NEC P20 Emulations
- Quarter Printing and Auto Set Facility
- Ultra Quiet Mode - 43dB(A)
- Colour Option Available
- FREE Silica Printer Starter Kit

**RRP £269**  
**SILICA STARTER KIT £49**  
**TOTAL VALUE: £318**  
**SAVING: £139**  
**SILICA PRICE: £179**  
+VAT=£210.33 - PRI 2490

9 PIN 144 CPS 80 COLUMN



**2 YEAR WARRANTY**

**FREE! STARTER KIT**  
WORTH £49 SEE LEFT

**CITIZEN 120D+**

- Citizen 120D+ - 9 pin
- 144cps Draft, 30cps NLQ
- 4K Printer Buffer + 2 Fonts
- Parallel or Serial Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- Pull tractor & bottom feed
- FREE Silica Printer Starter Kit

**RRP £199**  
**SILICA STARTER KIT £49**  
**TOTAL VALUE: £248**  
**SAVING: £133**  
**SILICA PRICE: £115**  
+VAT=£135.13 - PRI 2120

24 PIN 300 CPS 80 COLUMN



**2 YEAR WARRANTY**

**FREE! STARTER KIT**  
WORTH £49 SEE ABOVE

**SWIFT 240 MONO**

- Citizen Swift 240/240C - 24 pin - 80 col
- 300cps SD (15cpi), 240 cps Draft, 80cps LQ
- 8K Printer Buffer - 40K maximum
- 9 LQ Fonts + 2 Scalable Fonts (8-40ps)
- Font Cartridge Slot - for plug in 'style' fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson, IBM, NEC P20 & CEL Emulations
- Quarter Printing Facility
- Auto Set Facility - Bi-directional I/F, Auto Emulation Detection
- Command View IV Front Control Panel
- Ultra Quiet Mode - 43dB(A)
- Colour Printing Standard - Swift 240C
- Colour Printing Optional - Swift 240
- FREE Silica Printer Starter Kit

**RRP £339**  
**STARTER KIT £49**  
**TOTAL VALUE: £388**  
**SAVING: £149**  
**SILICA PRICE: £239**  
+VAT=£280.83 - PRI 2560

9 PIN 192 CPS 80 COLUMN



**2 YEAR WARRANTY**

**FREE! STARTER KIT**  
WORTH £49 SEE ABOVE

**SWIFT 9**

- Citizen Swift 9 - 9 pin - 80 col
- 192cps Draft, 48cps NLQ
- 8K Printer Buffer
- 3 Fonts
- Parallel Interface
- Graphics Res: 240 x 240dpi
- Epson and IBM Emulation
- Proportional Spacing
- FREE Colour Kit
- FREE Silica Printer Starter Kit

**RRP £199**  
**COLOUR KIT £38**  
**SILICA STARTER KIT £49**  
**TOTAL VALUE: £286**  
**SAVING: £127**  
**SILICA PRICE: £159**  
+VAT=£186.83 - PRI 2209

• Citizen Swift 24x - 24 pin - 136 col

- 192cps Draft, 64cps NLQ
- 8K Printer Buffer + 4 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson, IBM and NEC P6 Emulation
- Colour Option Available
- FREE Silica Printer Starter Kit

**RRP £489**  
**SILICA STARTER KIT £49**  
**TOTAL VALUE: £538**  
**SAVING: £239**  
**SILICA PRICE: £299**  
+VAT=£304.33 - PRI 2524

192 CPS 136 COLUMN



**2 YEAR WARRANTY**

**FREE! STARTER KIT**  
WORTH £49 SEE ABOVE

**CITIZEN SWIFT 24x**

**RRP £538**  
**SILICA STARTER KIT £49**  
**TOTAL VALUE: £587**  
**SAVING: £239**  
**SILICA PRICE: £348**  
+VAT=£393.33 - PRI 2524

• Citizen PN48 Notebook Printer

- Non-impact Printing on Plain Paper
- 53cps LQ - 4K Buffer + 2 Fonts
- Rear and Bottom Paper Loading
- Parallel Interface
- Graphics Res: 360 x 360dpi
- Epson, IBM, NEC P6 & Citizen Emulation
- Power: Mains, Battery or Car Adaptor

**RRP £325**  
**TOTAL VALUE: £325**  
**SAVING: £126**  
**SILICA PRICE: £199**  
+VAT=£233.83 - PRI 2100

64 CPS 80 COLUMN



**2 YEAR WARRANTY**

**NEW LOW PRICE!**

**CITIZEN PN 48**

**RRP £325**  
**TOTAL VALUE: £325**  
**SAVING: £126**  
**SILICA PRICE: £199**  
+VAT=£233.83 - PRI 2100

• Citizen Project - inkjet - 80 col

- 360cps Draft, 120cps NLQ
- 50 Nozzle Head - Whisper Quiet 47dB(A)
- 8K Printer Buffer + 3 Fonts
- Optional HP Compatible Font cards
- Parallel Interface
- Graphics Res: 300x300dpi
- HP Deskjet plus emulation

**RRP £496**  
**TOTAL VALUE: £496**  
**SAVING: £151**  
**SILICA PRICE: £345**  
+VAT=£405.38 - PRI 2000

360 CPS 80 COLUMN



**2 YEAR WARRANTY**

**NEW LOW PRICE!**

**CITIZEN PROJECT**

**RRP £496**  
**TOTAL VALUE: £496**  
**SAVING: £151**  
**SILICA PRICE: £345**  
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Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals and accessories, or help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for almost 14 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest FREE literature and begin to experience the "Silica Systems Service".

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**SILICA SYSTEMS**

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**LONDON SHOP:** 52 Tottenham Court Road, London, W1P 0BA Tel: 071-580 4000  
Opening Hours: Mon-Sat 9.30am-6.00pm No Late Night Opening Fax No: 071-323 4737

**LONDON SHOP:** Selfridges (1st Floor), Oxford Street, London, W1A 1AB Tel: 071-629 1234  
Opening Hours: Mon-Fri 9.30am-7.00pm (Sat close 6.30pm) Late Night: Thursday - 6pm Extension: 3914

**SIDCUP SHOP:** 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-302 8811  
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday - 7pm Fax No: 081-309 0017

**ESSEX SHOP:** Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA Tel: 0702 468039  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) No Late Night Opening Fax No: 0702 462363

To Silica Systems: AMSHP-0493-55, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX  
**PLEASE SEND A BROCHURE ON THE CITIZEN RANGE**

Mr/Mrs/Miss/Ms: ..... Initials: ..... Surname: .....  
Company Name (if applicable): .....  
Address: .....  
Postcode: .....  
Tel (Home): ..... Tel (Work): .....  
Which computer(s), if any, do you own? ..... 55N



# BUYING ADVICE FOR SHOPPERS

*Whether buying over the phone or at a local store, here's our advice on how to get what you want*

## BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

## BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.

- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

## BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

## MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
  - The goods must be 'as described'.
  - The goods must be fit for the purpose for which they were sold. If they fail to satisfy any or all of the criteria, then you are then entitled to:
    - Return them for a refund.
    - Receive compensation for part of the value.
    - Get a replacement or free repair.
- When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

## HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

## GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

## BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit making operations. **AS**

## A CHECK LIST FOR MAIL ORDER BUYING

**1** Make sure you know exactly what you want. Draw up a checklist of the specifications you are looking for and what you want it to be able to do. Check with the suppliers that their product matches your list.

**2** Will the product you have in mind work with your existing set-up, and anything else you are planning to buy?

**3** Can you see a demonstration? Many products are on display at computer shows around the country.

**4** Are there any hidden extras? Does it need 1Mb to run, or a hard disk?

**5** What technical support is provided by the supplier? Does the manufacturer offer after-sales advice? Check before you buy.

**6** Check the guarantee terms. How long is the free warranty? What does it offer?

**7** Draw up a list of these details and make them a condition of your order.

**8** Check the price and delivery details when you order, and make a note of them.

**9** Note down when you placed the order and who you spoke to.

**10** When it arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse. If it still doesn't work don't try to fix it – contact the supplier.

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# THE WORLD'S N°1 GVP GREAT VALLEY PRODUCTS AMIGA PERIPHERALS

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FOR THE AMIGA 1500/2000/4000  
All GVP G-Force accelerators can be turned into a hard card by adding a Mount Kit (GVA 4251 - £34.95). Any 1" SCSI drive can then be mounted on to the accelerator.



	030 25MHz	030 40MHz	030 50MHz	040 33MHz
Processor	68030EC	68030EC	68030	68040
Speed MIPS	7.48	12.1	15	30
Speed MHz	25	40	50	33
Math co-processor	68882	68882	68882	Built-in
Standard 32-bit RAM	1Mb	4Mb	4Mb	4Mb
Maximum 32-bit RAM	13Mb	16Mb	16Mb	16Mb
Extras	SCSI	SCSI	SCSI	SCSI Ser/Par
Code	UPG 0110	UPG 0430	UPG 0533	UPG 0740
PRICE	£499	£799	£1099	£1499

## HARD CARDS

FOR THE AMIGA 1500 & 2000

- Factory installed Hard Drives
- 0, 80, 120, 213, & 420Mb options
- On-board 8Mb memory sockets
- Add up to 6 SCSI devices

0Mb	HAR 1300	£129
40Mb	HAR 1340	£299
80Mb	HAR 1388	£349
120Mb	HAR 1422	£429
213Mb	HAR 1533	£579

The Impact II HC8 hard cards are the equivalent of the HD8+ hard drive, but for the 1500 and 2000 models. They are some of the fastest hard drives available, and incorporate an unpopulated 8Mb RAM expansion.

Return the coupon now for your

FREE copy of Silica Systems

## NEW GVP CATALOGUE

### SOUND SAMPLER



#### FOR ALL AMIGAS

- 8-bit stereo sampler
  - Plugs into parallel port
  - MIDI support for song input
  - Extensive editing features
- For the semi-professional and audio hobbyist a high quality 8-bit stereo sound sampler that connects into the parallel port on any Amiga 500, 600, 1500, 2000 or 3000 computer. Combined with one of the fastest, most powerful and easy-to-use sound and music editing programs available. Includes 4-track soundtracker file compatible sequencer.

~~£49.95~~ **£39.95**  
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#### FOR ALL AMIGAS

- 2x Composite Video, 1x S-VHS inputs
- RGB Composite video & S-VHS outputs available simultaneously
- Sound mixer, 2 mono inputs and 1 output
- Full software control via control panel, hotkeys and/or APress

GVP's G-lock genlock is a true price/performance breakthrough. The G-lock genlock works with all Amiga computers and even supports the new Chroma Key modes of the ECS/AA chip set. It is the only choice for the mid-range Amiga video enthusiast.

Ref: VID 2500 **£349**

## PLUG-IN HARD DRIVES FROM ONLY

### PLUG-IN HARD DRIVE AMIGA 500/500PLUS

The A500-HD8+ provides the ultimate in hard disk performance, memory expansion and future expandability for the Amiga 500. It incorporates the same VLSI custom chip and FAAAST ROM SCSI driver which are used in GVP's Series II SCSI/RAM controllers for the A1500/2000. As a result the A500-HD8+ offers unbeatable hard disk performance. The easy-access Autoboot/Game Switch allows the hard disk to be disabled, ensuring compatibility with the few games that will not work with a hard disk.

Every A500-HD8+ incorporates the latest in hard disk technology with a factory installed and formatted 1" high, low power, 3 1/2" SCSI hard disk, offering storage capacities up to 213Mb.

The A500-HD8+ also offers the ultimate in expandability. Additional SCSI peripherals can be attached to the external SCSI port. Up to 8Mb of internal Fast RAM expansion can be installed using state-of-the-art SIMM memory modules. The unique internal Mini-Slot allows for future expansion. Every A500-HD8+ has its own dedicated power supply, ensuring that the Amiga 500 power supply will not be overloaded and an internal fan to prevent the unit from overheating.

#### WHAT THE PRESS SAY...

'Superb build, excellent aesthetics and blinding speed make this the best A500 hard drive'...

AMIGA SHOPPER

'GVP claims this is the fastest hard drive in the world and none of our tests could prove that wrong... Untouchable. THE choice'

AMIGA SHOPPER

### PLUG-IN HARD DRIVE OPTIONS

MODEL	42Mb	80Mb	120Mb	213Mb
HD8+ HARD DRIVE	<b>£299</b> INC VAT Ref: HAR 0840	<b>£399</b> INC VAT Ref: HAR 0888	<b>£499</b> INC VAT Ref: HAR 0922	<b>£599</b> INC VAT Ref: HAR 0933

### HD8+ HARD DRIVE A530 HD & ACCELERATOR

#### HARD DRIVE

- SCSI HARD DRIVE
- 40, 80, 120 & 213Mb versions
- ULTRA FAST ACCESS
- TRANSFER RATE UP TO 2,100K/sec\*
- (\*THE RATE OF THE 213Mb HD)

#### ACCELERATOR

- 40MHz 68030EC CPU
- OPTIONAL 68882 MATHS CO-PROCESSOR
- RUNS AT 12.1 MIPS (FASTER THAN AN A3000!)
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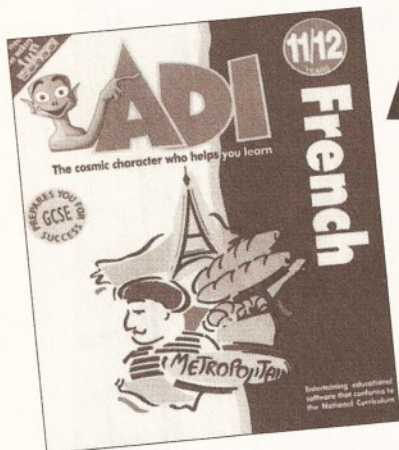
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Which computer(s), if any, do you own? ..... 68J



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# Be smart - enter our ADI competition



**T**his month we've teamed up with Europress Software to bring you bundles of the latest educational software.

The ADI and Fun School series of programs are designed to make learning a doddle on the Amiga

The Fun School programs are aimed at the youngest users and include Merlin's Maths, Spelling Fair and Paint and Create. All are simple to use and incorporate eye-catching graphics and rewarding sequences to help make learning easy and fun.

For the eleven to fifteen year-old there are the packages ADI Maths, English and French which feature a jolly little extra-terrestrial chappie, ADI, who offers the child help,

**Thanks to those nice people at Europress Software we've got fifteen copies of ADI educational programs up for grabs - just answer three simple questions and you could be a winner**

congratulations and encouragement as they learn.

Each of the fifteen prize winners will get a program of their choice (worth £25.99) along with a gift bag stuffed with badges, pencils and other goodies.

To enter, just write the answers to the three questions in the panel on a postcard (or back of a sealed envelope) and send it to:

**ADI goes to school  
Amiga Shopper  
29 Monmouth Street  
Bath BA1 2DL**

The closing date is April 5. One entry per household please, otherwise we'll get cross. Please state if you would rather your name is not included on a mailing list. **AS**

## THE CHALLENGE • THE CHALLENGE

- |  |  |
|--|--|
| 1. Which of ADI's extra-terrestrial chums had to 'phone home'? | b) 8.25<br>c) 6.75   |
| a) Superman<br>b) ET<br>c) Dr Who                              | 3. The word meaning 'a place where you can stay' is spelt:<br>a) Accomodation<br>b) Accommodation<br>c) Acommodation |
| 2. What is the value of $\sqrt{56.25}$ ?                       | a) 7.5   |

## THE CHAMPIONS!

The lucky winner in our 'Fax of Life' competition from the February issue of *Amiga Shopper* is: Mrs A Curtis of Chudleigh in Devon - who'll be receiving a top-of-the-range SupraFaxModem V32bis worth £269.99.

The runner-up was Chris Hayden of Oakwood in London - his prize is the SupraFaxPlus modem, priced at £139.99

Prizes will be winging their way to both readers very soon - courtesy of the First Computer Centre. Our congratulations to both winners.

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• PS Oh, and if you do have any problems getting hold of your favourite Amiga mag, call Kate Elston on 0225 442244 and she'll help you out.

## IN NEXT MONTH'S FACT-PACKED ISSUE

- Choose a word processor. We present the sequel to our most popular round-up ever, in which we examine in detail the latest in Amiga word processing technology. If you're intending to buy one of these beasts, then you can't afford to miss next month's ish.
  - The cover disk returns! Another mélange of the very latest and best in public domain and shareware gets packed into the *Amiga Shopper Shareware Collection Volume III*.
  - Legal advice for your mail order worries in *Amiga Advocate*.
- Plus: regular columns on Amiga Answers, public domain, video, AmigaDOS, desktop publishing, programming, education, music, chaos, comms and much more**

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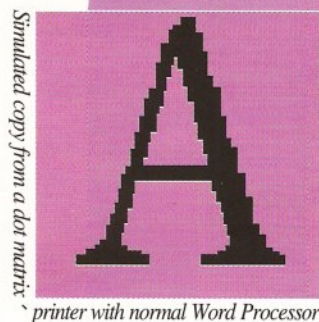
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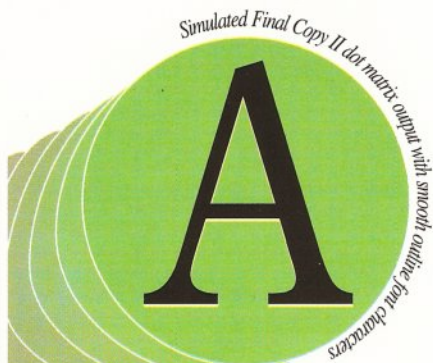
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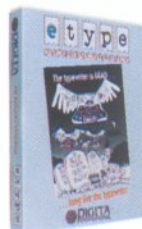


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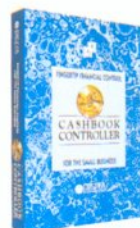
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